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The Vocal Principles of Garcia as Represented by His Pupils: Bataille, Marchesi, and Stockhausen.

James Richard Joiner

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BATAILLE, MARCHESI, AND STOCKHAUSEN

The Louisiana State University and Agricultural and Mechanical Col.

PH.D.

1979

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THE VOCAL PRINCIPLES OF GARCIA
AS REPRESENTED BY HIS PUPILS:
BATTAILLE, MARCHESI, AND STOCKHAUSEN

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The School of Music

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ABSTRACT

Manuel Patricio Rodriguez Garcia (1805-1906) was in a unique position in the history of vocal pedagogy. While his teaching methods continued the bel canto tradition passed to him by his father, he was very much a part of the contemporary interest in scientific investigation of vocal production. Highly successful as a teacher, his students graced the opera and concert halls of Europe and the United States for many decades.

This investigation is concerned with the Garcia teaching methodology, the influences which contributed to it, and its application and adaptation by his pupils who became teachers. The Garcia pupils chosen for this study were selected on the basis of their historical importance as both singers and teachers, and according to the significance and availability of their published materials on vocal pedagogy. Three people clearly fulfilled the above criteria: Mathilde Marchesi (1821-1914), a highly regarded performer, whose method and vocalises have been widely published; Charles Battaille (1822-1872), a medical doctor who sang with the Opéra Comique and Théâtre Lyrique and who published his research on the singing voice in two volumes; and Julius Stockhausen

(1826-1906), the noted interpreter of the lieder of Schubert, Schumann, and Brahms, and singing teacher in leading German institutions, including his own singing school in Frankfurt-am-Main.

In this study, the methods and writings of these teachers are examined and their pedagogical contents are presented in the following categories: breathing; attack; registration; resonance, vowel color, and diction; and overall coordination of the vocal mechanism. An analysis of the attitudes and approaches of each teacher in regard to the above categories is provided, and comparisons are made between their methods and those of Garcia. Occasional reference is made in cases where current scientific research has added new insight to the physiological principles held by some of the teachers.

Conclusions are drawn from the study according to the beliefs and procedures of each teacher in regard to each of the above categories. In general, all of the teachers were found to stress efficient phonation, well-coordinated with proper breathing and breath control. They were equally concerned with thorough development of the vocal scale and the blending of registers, sufficient for the study of bel canto literature. They placed constant emphasis upon vocal freedom, flexibility, and control, as opposed to volume of sound. Finally, they were concerned with voice qualities as affected by

laryngeal position and mouth position, and with vowel colors and their influence upon the vocal scale and vocal interpretation. The study also makes possible some determination of the contributions of the bel canto tradition to the teaching methods used by these teachers, as well as the contributions made to their teaching contemporary scientific insight. Contemporary science was found to have made its greatest contribution in the areas of phonation and voice qualities. Teaching methodology in other areas, particularly registration and vocal flexibility, was apparently strongly influenced by traditional approaches. The appendices include two translations of noteworthy publications of the period: an account by Henri Dutrochet of Garcia's presentation of the Mémoire sur la voix humaine to the French Academy of Sciences in 1840, and an extract from Battaille's Nouvelles recherches sur la phonation, published in 1861.

I. INTRODUCTION

Manuel Patricio Rodriguez Garcia (1805-1906) is credited by some writers as being the first singer to investigate in depth the science of human voice production.¹ In addition to being highly respected in medical circles of his day,² his historical position as a successful teacher of prominent singers is enhanced by the lengthy list of successful singers who came under his tutelage. Among these were Jenny Lind (1820-1887), Henrietta Nissen (no dates available), Catherine Hayes (1825-1861), Mathilde Marchesi (1821-1914), Johanna Wagner (1828-1894), Julius Stockhausen (1826-1906), Charles Battaille (1822-1872), and Charles Santley (1834-1922). Two different perspectives have become associated with Manuel Garcia's historical position. Robert Donington, among others, has regarded his teaching as the culmination of the bel canto teaching method and the beginning of its end.³ David C. Taylor, however, has heralded

¹International Cyclopedia of Music and Musicians, 10th ed., s.v. "Singing," by Oscar Thompson.

²See the accounts of the Garcia centenary celebration, 1905, in William H. Woglom, Discoverers for Medicine (New Haven: Yale University Press, 1949), 98-99

³Robert Donington, A Performer's Guide to Baroque Music (London: Faber and Faber, 1973), 60-63.

Garcia as the father of a "modern scientific system" of vocal teaching.⁴

The primary concern of this study has been to investigate the effect of Garcia's research upon his teaching principles and to compare these principles with those found in the methods and writings of selected pupils. The criteria used for pupil selection were their historical importance as both singers and teachers and evidence of their interest in vocal pedagogy in their publication of methods and writings concerning this subject. After all Garcia pupils were subjected to these criteria, three names clearly dominated the field and were chosen for the study: Charles Battaille, a medical doctor who sang with the Opéra Comique and Théâtre Lyrique and who published his research on the singing voice and his teaching method in two volumes; Mathilde Marchesi, highly regarded as a concert singer in England and as an opera performer on the continent, who taught at the Vienna and Paris Conservatories, and whose method and vocalises have been widely published; and Julius Stockhausen, the noted interpreter of the lieder of Schubert, Schumann, and Brahms, and singing teacher in leading German institutions, including his own singing school in Frankfurt-am-Main.

In the present study, the methods and writings of the

⁴Daniel G. Mason, gen. ed., *The Art of Music*, 12 vols. (New York: The National Society of Music, 1915), vol. 5: The Voice and Vocal Music, by David C. Taylor, 56-57.

above Garcia teachers have been examined and their pedagogical contents have been presented in general teaching approaches and in the following categories: breathing; attack; registration; resonance, vowel color, and diction; and overall coordination of the vocal mechanism. No attempt was made to include stylistic interpretation in the above categories. While the sources consulted dealt at length with this subject, it was felt that nineteenth-century performance practice is a research area outside the province of this study, which is specifically pedagogical in approach and nature.

The order of presentation of the material on each Garcia teacher was determined chronologically according to the date when the teachers began their voice study with Garcia. Following biographical material and descriptions of their research and publications, an analysis of the attitudes and approaches of each teacher according to the above categories is presented. As a part of this process, comparisons have been made between the methods of Garcia and the other teachers. In instances where current scientific research has added new insight to the physiological principles held by some of the teachers, brief reference is made.

It is hoped that this study of the assimilation of a teacher's principles in the works of his students contributes to our knowledge of the communication of concepts from teacher to student. It is further hoped that

information resulting from this study will be helpful in determining whether there was, in fact, a Garcia "school" of teaching, as claimed by American singer and Garcia pupil Anna Schoen-René,⁵ or whether, in reality, Garcia's teaching had notable influence, but permitted his pupils their own reactions and adaptations.

Definitions

Pedagogical Terms

bel canto (It., beautiful singing). The style of singing which flourished in Italy from the seventeenth to the early nineteenth century. It consisted of an emphasis on beauty of tone, careful phrasing, an even vocal scale, and command of vocal flexibility, in contrast to the dramatic expression and declamatory styles which evolved in later nineteenth-century vocal music.

passaggio. Vocal transition areas between registers.

solfeggio. Vocal exercises sung to a vowel or to the syllables of solmization, these being used instead of a text.

vocal exercise. Basic vocal drills designed to accomplish a specific purpose.

vocalize. A vocal piece which often employs similar patterns as the vocal exercise, but is set within a

⁵Anna Schoen-René, America's Musical Inheritance: Memories and Reminiscences (New York: G. P. Putnam's Sons, 1941), 198-205.

larger, more developed musical scheme. Vocalises were designed to accomplish the same pedagogical purpose as vocal exercises by providing practice material of a more interesting nature.

Anatomical Terms

arytenoid cartilages. Paired cartilages located on the superior border of the cricoid cartilage. The vocal folds run between the thyroid cartilage and the arytenoids. Many of the biological and non-biological functions of the larynx are controlled through movements of the arytenoid cartilages.

cartilaginous glottis. The portion of the glottis bounded by the vocal processes and the medial surfaces of the arytenoids.

cricoid cartilage. A ring-shaped cartilage located immediately superior to the uppermost tracheal rings. It forms the lower part of the laryngeal framework.

epiglottis. A leaf-shaped cartilage, located just above the thyroid cartilage, which prevents food from entering the larynx during deglutition.

extrinsic laryngeal muscles. Muscles which originate outside the larynx and which are responsible for support of the larynx and for fixing it in position.

fauces. The port through which the oral cavity communicates with the pharyngeal and nasal cavities. The fauces are bounded laterally by the palatine

arches, above by the soft palate, and below by the dorsum of the tongue.

glottis. The space between the vocal folds.

intrinsic laryngeal muscles. Muscles which have both attachments within the larynx. The intrinsic muscles are largely responsible for control of sound production.

membranous glottis. The anterior portion of the glottis bounded laterally by the vocal ligaments and muscular portion of the vocal folds.

pharynx. The musculo-membranous tube extending from the base of the skull to the level of the sixth cervical vertebra behind and the cricoid cartilage in front.

phonation. The production of sounds by the vibration of the vocal folds.

thyroid cartilage. The largest cartilage of the larynx. It articulates with the cricoid cartilage laterally, in such a way that various movements are possible between the two cartilages. The vocal folds are attached between the arytenoid cartilages and the interior surface of the thyroid cartilage.

ventricle of Morgagni. The cavity of the larynx, bounded above by the ventricular or false vocal folds and below by the true vocal folds. It was described in detail in 1741 by Morgagni, hence its name.

vestibule of the glottis. The portion of the laryngeal
ventricle above the vocal folds.

II. THE RESEARCH AND TEACHING PRINCIPLES OF GARCIA

A Survey of Pedagogical Approaches and Their Relationships to Voice Science Research Prior to Garcia

Although national pride and preferences pervade the history of singing and voice pedagogy, writers of several nationalities have viewed Manuel Garcia as both the culmination of scientific progress and the herald of a new era in the application of scientific findings to voice training. In 1915 David C. Taylor saw the use of the laryngoscope by Garcia as "the beginning of the modern scientific system of training the voice" and Garcia as "the vocal teacher who contributed most to the promulgation of the scientific idea."¹ Jane Arger gave French science and teaching criteria a large part of the credit for the success of the research and teaching of Garcia and his students, "whose scientific rules, put into practice by numerous teachers, have given us the best singers up to our own day."²

¹Taylor, 56-57.

²Albert Lavignac, gen. ed., Encyclopédie de la musique et dictionnaire du conservatoire, 11 vols. in 2 parts. Physiologie vocale et auditive technique vocale et instrumentale, s.v. "Evolution de la technique vocale," by Jane Arger, 990.

Arnold Geering found in Garcia's teaching the blend of physiological knowledge and sound teaching which Mersenne, Bacilly, and Bérard had called for many years before.³

However, before Garcia there were apparently mixed feelings toward the usefulness of physiological knowledge to singing teachers. Philip Duey, in his history of the bel canto era, cites the following passage from Bontempi's history as proof of a relative disinterest in science on the part of the eighteenth-century teachers:

The physiologists expound these differences, caused by position, passage, shape, air, expiration, and all the conditions of the larynx; based on the immutable foundation of incontestable reason. Our opinion is, that everything which is derived from experience has no need of reasoning . . . While they go on investigating nature in order to find it out with reason, we . . . shall be content to understand it with the teaching of experience itself.⁴

On the other hand, there was apparently some utilization of known science in the education of bel canto singers. The Bontempi history and Arteaga's operatic history describe the required study of current physiological laws by

³Die Musik in Geschichte und Gegenwart, s.v. "Gesangspädagogik," by Arnold Geering, 1925.

⁴G. A. Bontempi, Historia Musica (Perugia, 1695), cited by Philip A. Duey, Bel Canto in Its Golden Age: A Study of Its Teaching Concepts (New York: King's Crown Press, 1951), 127.

singing students of the period.⁵ J. F. Agricola (1720-1774), in his 1757 enlargement of Tosi's important singing treatise, provided in the first chapter a detailed description of the larynx and its functions, and asserted:

The knowledge of the vocal organs is always very useful to the teacher and in many cases indispensable. For even when nature has adorned a singer with the best qualities, the knowledge of physiology is necessary to prevent all damages that might be done through ignorance. But when a teacher finds natural faults and defects in a voice, how can he successfully battle with them if he is unacquainted with the seat of the evil.⁶

Long before Garcia began teaching in Paris, singing teachers were expressing an interest in voice production and physiologists were exploring its secrets. Taylor found the treatise De la formation de la voix de l'homme, 1741, by Antoine Ferrein (1693-1769), a French physician, to be the first work on vocal physiology to receive attention by persons interested in singing. Ferrein appears to be the first to have given the name of vocal cords to the edges of the glottal muscles.⁷ Jean Baptiste Bérard (1710-?), in 1755, became the first singer to write a

⁵Bontempi, Historia Musica, and Esteban Arteaga, Rivoluzioni del teatro musicale italiano (1783-88), cited by Lennox Browne and Emil Behnke, Voice, Song, and Speech (New York: G. P. Putnam's Sons 1907), 4. Browne and Behnke cite these passages to support their conception of Garcia as the herald of a new age of "scientific" teaching of singers.

⁶J. F. Agricola, Anleitung zur Singkunst (1757), cited by Brown and Behnke, 5.

⁷Taylor, 56.

complete treatise which included, in addition to contemporary performance practice, a description of teaching procedures and philosophy, and an elementary description, with drawings, of the primary vocal and respiratory organs. Bérard was interested in sons à caractère (expressive sounds), achieved by effective management of exhalation. He also believed that differences in thickness, length and tension of the vocal cords caused the different voice classifications.⁸

French gains in voice science were destined to fill a void which had been occupied in France only by Italian methodology. At the beginning of the nineteenth century the old feud concerning French and Italian singing styles still persisted. Arger believed that nineteenth-century writers confused national musical style with performance, to the detriment of French singers: "To these gentlemen, French declamation seemed too full of shouts, whereas Italian airs alone were melodic and singable. Therefore, the French shouted while the Italians sang."⁹ The result was that French singers were sent to Italy for training in the Italian method, which was said to have existed in reality only by oral tradition, and which, to Arger, was "simply a combination of good sense on the part of the master combined

⁸ Jean Baptiste Bérard, L'Art du Chant (1755), trans. Sidney Murray (Milwaukee: Pro Musica Press, 1969), 24.

⁹ Arger, 989. Translated by the writer.

with the inexhaustible patience of the student."¹⁰ The infatuation with Italian style and technique existed to such a degree that Italian teachers were brought to the Paris conservatory, where lessons were taught in Italian or in Italian and French alternately.¹¹

In early nineteenth-century France, interest in vocal science flowed from two directions. Singing teachers were not totally satisfied with a method that was an Italian tradition and began to look toward French science for the answers. Simultaneously, French science was in the early stages of what was to become a flurry of activity and investigation into the human voice as used in both song and speech. Some of the early works which revived an interest in the study of phonation were by Dutrochet, who in 1806 compared glottal action to lips playing a horn,¹² Magendie, in 1808, and Savart, in 1825.¹³ The pages of the Comptes rendus, the Journal of the French Academy of Sciences, reflect this growing interest almost from its inception in 1835 on. The Journal's index for the first thirty-one volumes lists such titles as these prior to Garcia's entries in 1840:

Ballard, "Considérations sur la voix humaine et sur les moyens propres à lui donner plus de force et d'intensité,"

¹⁰ Ibid.

¹¹ Ibid.

¹² Taylor 56.

¹³ Arger, 990.

1836-1837 (three entries).

Cagniard-Latour, "Sur la pression à laquelle l'air contenu dans la trachée-artère est soumis pendant l'acte de la phonation," 1836.

Laurent, "Sur l'enseignement méthodique de l'articulation de la voix," 1837, 1839 (two entries).

Nonat, "Recherches sur le mécanisme de la voix," 1839.

Sechaud, "Considerations physiologiques sur la voix humaine et son mécanisme pendant le chant," 1839.¹⁴

Arger lists two other works independently published prior to Garcia:

Debay, Hygiène de la voix et gymnastique des organes vocaux, 1823.

1831.¹⁵ Malgaigne, Nouvelle théorie de la voix humaine,

It must be noted that nineteenth-century voice teachers were aware of these developments and, if they were not reading them, they were at least expressing an interest in them. Arger speaks of such works as being "popularized" by physiologists and as being "placed in pages at the disposal of artists."¹⁶

Garcia's Research and Its Influence upon his Teaching Principles

Biographical Material

Domenico Corri (1746-1825), a pupil of Nicolo

¹⁴ Comptes rendus hebdomadaires des séances de l'Académie des sciences: Table Général 32 (1835-50), 1009.

¹⁵ Arger, 990.

¹⁶ Ibid.

Porpora (1686-1766), held a positive view toward scientific knowledge and borrowed this prediction:

The late celebrated Dr. Samuel Arnold, very sensibly observed, that the anatomy of the voice would, perhaps never be clearly explained till some physician should study the subject--who was also a good musician.¹⁷

As the nineteenth century dawned, the fields of science and singing awaited the combination of abilities found in Manuel Garcia.

The Garcia family of musicians has been described by Henry Chorley, a contemporary arts critic, as

. . . representative artists, whose power, genius and originality have impressed a permanent trace on the record of the methods of vocal execution and ornament.¹⁸

The Garcia record of vocal accomplishment began with Manuel Garcia's father, Manuel del Popolo Vincente Garcia (1775-1832), a leading tenor of the day, for whom Rossini wrote the part of Almaviva in Il Barbière di Siviglia in 1816. The older Garcia was reportedly given the Italian singing methods in 1811 by Giovanni Anzani (1744-1826), a leading Italian tenor.¹⁹ In addition to the younger Manuel, two other Garcia children received instruction from their father and became renowned figures in the art of singing. Maria

¹⁷ Domenico Corri, The Singer's Preceptor or Corri's Treatise on Vocal Music (London: Chappel and Co., 1810), in Edward Foreman, ed., The Porpora Tradition (Minneapolis: Pro Musica Press, 1968), 27.

¹⁸ Grove's Dictionary of Music and Musicians, 5th ed., s.v. "Garcia Family," by Julian Marshall.

¹⁹ Charles Lunn, The Philosophy of Voice (London: Bailliere, Tindall and Cox, 1900), 174-175.

Felicita (1808-1836), a contralto, was known to the singing world as Malibran and was an acclaimed performer of Bellini, Rossini, Mozart, and Meyerbeer.²⁰ Pauline Viardot-Garcia (1821-1910), for whom Brahms wrote the "Alto Rhapsody," Op. 53, was equally well known as a teacher.²¹

The younger Manuel, born in 1805, received harmony instruction from Fétis and singing lessons from his father.²² He sang baritone roles with the family opera company in New York City and Mexico City from 1825-1828. However, reviews of their performances gave much more acclaim to the other Garcias and company members than to the young baritone.²³ Following this American tour, the younger Garcia's interest turned to teaching. He assisted his father in teaching in Paris and in 1830 took courses in vocal physiology at military hospitals in that city. His enthusiasm for the subject is reflected in his sister Pauline's accounts of his habit of bringing home the windpipes of various animals into which she was instructed to blow with bellows. The results were "clucks, bleatings, and roars that were almost

²⁰ Grove's, 5th ed., s.v. "Mailbran," by Julian Marshall.

²¹ Ibid., s.v. "Viardot-Garcia, Pauline," by Mrs. Julian Marshall.

²² Ibid., s.v. "Garcia, Manuel Patricio Rodriguez," by Julian Marshall.

²³ Julius Mattfeld, A Hundred Years of Grand Opera in New York 1825-1925 (New York: New York Public Library, 1927, 13-16.

lifelike."²⁴ In 1831 Manuel Garcia left home and set up his own teaching practice in Paris. His physiological study continued, however, and contributed to his position as a unique figure in the world of singing:

He was no mere singing teacher, but a man with a consuming interest in the anatomy and physiology of the larynx; a man who had dissected it on countless occasions and pondered over it day and night, and who was no doubt at least as familiar as many a physician of his time.²⁵

In 1840 Garcia presented the Mémoire sur la voix humaine before the French Academy of Sciences, which "laid the foundation for all subsequent investigations on the voice."²⁶ In the same year the first of numerous editions of his singing treatise, Traité complete de l'art du chant, was published.²⁷ In 1842 he was appointed professor of singing at the Paris Conservatoire,²⁸ and five years later he published Part II of the Traité.²⁹ He was appointed

²⁴William H. Woglom, Discoverers for Medicine (New Haven: Yale University Press, 1949), 95. "Almost lifelike" may be an overstatement. Resonating cavities above the glottis are necessary, even in lower animals, for giving characteristic qualities to the voice. See Peter B. Denes and Elliot N. Pinson, The Speech Chain: The Physics and Biology of Spoken Language (Garden City, New York: Anchor Press, 1973), 47-50, 58.

²⁵*Ibid.*, 90.

²⁶*Ibid.*, 89. This evaluation is given by several sources, none of which credit the source.

²⁷Manuel Garcia, A Complete Treatise on the Art of Singing: Part II (Paris: The Author, 1847); trans. and ed. by Donald V. Paschke (New York: Da Capo Press, 1975), 260-261.

²⁸Grove's, s.v. "Garcia, Manuel Patricio Rodriguez."

²⁹Garcia, A Complete Treatise, 260-261.

professor of singing at the Royal Academy of Music in London in 1850 and retained the post until his retirement in 1895.³⁰ Garcia's monumental study of the larynx with the laryngoscope occurred in September, 1854. His detailed description of that event, "Observations on the Human Voice," appeared in the Proceedings of the Royal Society of London in 1855.³¹

Garcia remained active in voice teaching and in the musical and scientific circles of London to the end of his long life. His Hints on Singing (ca. 1877) brings some of his teaching principles up to date with his later research and experience.³² His one-hundredth birthday was marked by festivities which began at the Royal Medical and Chirurgical Society in London. Addresses were presented by representatives of the Royal Academy of Music, the Royal College of Music, and from laryngological societies from various countries. During the banquets and festivities, Garcia was invested with the Royal Order of Alfonso XII in the name of the King of Spain. The German Emperor conferred the Great Gold Medal for Science and honorary membership was conferred by most of the foreign societies represented. Garcia died

³⁰Grove's, s.v. "Garcia, Manuel Patricio Rodriguez."

³¹Manuel Garcia, "Observations on the Human Voice," Proceedings of the Royal Society of London, 8, 13 (1855), 399-410.

³²Manuel Garcia, Hints on Singing, ed. Hermann Klein (New York: E. Ascherberg and Co., 1894). There is some contradiction concerning the original date of this work. See n., p. 28.

July 1, 1906.³³

Garcia's Research and Publications

Garcia had been teaching privately in Paris for ten years by the time he wrote the Mémoire. Garcia presented this work to the Academy in 1840. It was published seven years later.³⁴ In the Mémoire, he concentrated upon vocal registration, vocal qualities, and their physiological causes. In this first publication Garcia placed his definition of registration which was destined to become a basis for most subsequent research on the subject.³⁵

By the word register, we understand a series of consecutive and homogenous sounds going from low to high, produced by the development of the same mechanical principle, and whose nature differs from another series of sounds equally consecutive and homogenous produced by another mechanical principle. All the sounds belonging to the same register are consequently of the same nature, whatever may be the modifications of³⁶ timbre or of force to which one subjects it.

Garcia did not attempt to discuss the underlying physiology of registration at length in the Mémoire. Detailed physiological material appeared for the first time in the "Observations on the Human Voice," 1855. Garcia's concern with voice qualities in the Mémoire was restricted to two

³⁴Manuel Garcia, Mémoire sur la voix humaine (Paris: E. Duverger, 1847).

³⁵Willard R. Zemlin, Speech and Hearing Science: Anatomy and Physiology (Englewood Cliffs, N. J.: Prentice-Hall, 1968), 192.

³⁶Manuel Garcia, A Complete Treatise on the Art of Singing (excerpts), trans. Donald V. Paschke (By the Translator, 1970), xxvi.

principal colors: clear timbre, produced by a general contraction of the vocal tract, particularly lowering the soft palate and raising the larynx; and somber timbre, caused by an elongation and enlargement of the tract, with a raised palate and lowered larynx.³⁷ Together with an interest in the glottal attack, registration and voice qualities were destined to occupy the bulk of Garcia's research throughout his career.

The Mémoire was presented to the Academy of Sciences on November 16, 1840. A report on the Mémoire is found in the Academy's minutes of April 12, 1841. By that time, Garcia had been called in by the Academy's investigating committee to demonstrate his theories with his voice students. The Mémoire was accepted by the Academy sometime after April 19, 1841.³⁸

The report on the Mémoire, written by Henri Dutrochet, first set forth the current interest among scientific bodies in voice registers and various voice qualities, indicating that interest in these factors abounded before Garcia's first publication.³⁹ Dutrochet described how Garcia's students demonstrated distinctive register characteristics by singing the same sound first in one register

³⁷ Ibid., xxxviii-xli.

³⁸ Ibid., xviii.

³⁹ Henri Dutrochet, "Rapport sur le Mémoire sur la voix humaine, présente à l'Académie des Sciences; par M. Manuel García", Comptes rendus 12, 1 (1841), 638-639. A translation of this report is provided in Appendix I, p. 242.

and then in another. The students also demonstrated their facility in blending from one register into another to increase the vocal compass and in singing the same pitch in full voice and falsetto. In order to demonstrate how one register differs from the other in mechanical principle, Garcia had a singer choose a pitch in the vocal compass common to both registers. The singer sustained the note in full voice for as long as possible while time was measured with a metronome. When the same note was sung in falsetto, however, it could be sustained only for a much shorter time frame.

This experiment proves that, in a given time-period, and for the production of the same scale degree, the vocal instrument dispenses more air in producing the falsetto than in producing the full voice or chest voice.

The reaction by Dutrochet and the other commissioners was apparently most enthusiastic in regard to the modifications in vocal mechanism which Garcia theorized for various voice qualities:

It is easily seen, according to this account, that one and the same mechanism could not explain the formation of all the musical sounds that can be produced by the human vocal organ. This organ can truly be regarded as being alone capable of representing an assembly of instruments different one from the other, and capable of mysterious modifications which occur and are established with an admirable speed according

⁴⁰Dutrochet, 640. Translated by the writer. No recent replication of this experiment could be found. Dutrochet's account did not provide any theory or explanation for the results of the experiment. It is possible that Garcia's student was sustaining the pitch in a very breathy falsetto, which would account for the shorter length of time it could be sustained.

to the will of the experienced singer.⁴¹

Dutrochet's report brought up one point which was destined for controversy. He remarked that Garcia's findings concerning laryngeal movement related to the somber timbre were not new. He cited a report presented to the Academy June 1, 1840 by Diday and Pétrequin which found that the somber voice was accompanied by a low larynx position throughout its scale. Diday and Pétrequin, however, apparently believed this quality to be useful only in the chest register. On the basis of Garcia's findings concerning its usefulness with both registers, Dutrochet accorded Garcia a part in its discovery.⁴²

Garcia, however, did not let the matter lie. In the next volume of the Comptes rendus his letter appeared asserting the originality of his research. He claimed to have been using the somber timbre as a part of his teaching procedure for several years. He cited the names of scientists with whom he discussed it in 1832 and named former students who could attest to his using it as a part of his teaching technique. Garcia took issue with Diday and Petrequin's reference to the somber timbre as "a new species of singing voice." He believed it to be "a fundamental timbre, employed of necessity in the two registers."⁴³

⁴¹Ibid., 643. Translated by the writer.

⁴²Ibid., 642-643.

⁴³Comptes rendus 12, 2 (1841), 693.

Diday immediately responded, claiming first that there was less proven fact in Garcia's theory than in theirs, which he felt was considerably different. He then stated that their work was published five and one-half months prior to Garcia's and by virtue of publication date the claim to the idea was rightfully theirs.⁴⁴ The matter apparently ends with this last entry.

Manuel Garcia's second major publication on singing was his Complete Treatise on the Art of Singing, Part I of which was published in 1840. Donald V. Paschke has provided a publication chronology of Parts I and II:

École de Garcia; Traité complete de l'Art du Chant. Paris: the author, 1840.

This publication contained only Part I.

École de Garcia; Traité complete de l'Art du Chant. Paris: the author, 1847.

Part I appears here in its second edition, Part II in its first edition.

École de Garcia; Traité complete de l'Art du Chant. Mayence: B. Schott's Sons, 1847.

Part I and Part II are in separate volumes with separate pagination . . . The preface of Part I includes a lengthy extract from the Memoire. Both parts have parallel French and German texts.

Nouveau Traité sommaire de l'Art du Chant. Paris: M. Richard, 1856.

The author referred to this as the fourth edition of his method. It was considerably abridged from the earlier editions, and it reflects some very slight alterations as a result of his use of the laryngoscope. This version continued to be reprinted throughout the author's lifetime.

English Translations

Garcia's Complete School of Singing. London: Cramer, n.d.
No translator is indicated.

⁴⁴Ibid., 797.

The Art of Singing, Part I. Boston: Oliver Ditson Co., (18--?), n.d.

This is a nearly direct translation of the 1856 text . . . Theodore Presser reprinted this version in the 1940's.

Garcia's Treatise on the Art of Singing. ed. Albert Garcia. London: Leonard and Company, 1924.

This is essentially a translation of the 1856 version. The editor (a grandson of the author) further abridged the work and replaced some of the musical examples with those used in the earlier editions.⁴⁵

The 1840 edition of Part I contained an author's preface which explained that the method being set forth was essentially that of his father, the report to the French Academy of Sciences on Garcia's Mémoire, a brief description of the vocal organs, and an extract from the Mémoire itself.⁴⁶ Part I was designed to provide the means by which a vocal instrument could be developed for the performance of music of Garcia's day.⁴⁷ The work presents an interesting union of physiological explanations and traditional technical emphases, with many vocalises designed for specific purposes. Garcia was obviously seeking a justification in current scientific research for traditional teaching. His stated intention was "to reproduce [his] father's method, attempting only to give it a more theoretical form to connect results with causes."⁴⁸

⁴⁵Garcia, A Complete Treatise, Part II, ed. Paschke, 260-261.

⁴⁶Garcia, A Complete Treatise (excerpts), xviii.

⁴⁷Garcia, A Complete Treatise, Part II, ed. Paschke, viii.

⁴⁸Taylor, 57.

Part II, appearing first in 1847, was intended as a manual of interpretation and performance practice. Thereby, it was an application of the technical approaches embodied in Part I. As such, it was an important, detailed treatment of performance practice, particularly for the music of Cimarosa, Mozart, Rossini, Donizetti and Bellini. In addition to his concern with the technical development of voices, Garcia was also particular about careful stylistic performance.⁴⁹ Examples of interpretation of specific passages from the works of the above composers are abundant in Part II. Garcia's interpretative concerns embrace cadenzas, ornaments, tempo, phrasing, and voice qualities used for communication of specific emotions. Both Part I and Part II were destined to undergo some degree of modification as a result of Garcia's experiments with the laryngoscope.

Garcia's next publication, "Observations on the Human Voice," (1855), which announced his studies with the laryngoscope, was a relatively objective study in spite of his boyish excitement concerning the event.

One September day, in 1854, I was strolling in the Palais Royal, preoccupied with the ever-recurring wish so often repressed as unrealizable, when suddenly I saw the two mirrors of the laryngoscope in their respective positions, as if actually present before my eyes. I went straight to Charriere, the surgical-instrument maker, and asking if he happened to possess a small mirror with a long handle, was informed that he had a little dentist's mirror, which had been one of the failures of the London exhibition of 1851. I

⁴⁹Garcia, A Complete Treatise, Part II, ed. Paschke, viii-xii.

bought it for six francs. Having obtained also a hand mirror, I returned home at once, very impatient to begin my experiments. I placed against the uvula the little mirror (which I had heated in warm water and carefully dried); then, flashing upon the surface with a hand mirror a ray of sunlight, I saw at once, to my great joy, the glottis open before me, and so fully exposed, that I could perceive a portion of the trachea. When my excitement had somewhat subsided, I began to examine what was passing before my eyes. The manner in which the glottis silently opened and shut, and moved in the act of phonation filled me with wonder.⁵⁰

Garcia's "Observations on the Human Voice," was based on his study of his own larynx and that of others during the act of singing.⁵¹ The account is concerned with the opening and closing of the glottis together with the movements of specific cartilages, ligaments, and muscle fibers in the process of voice registration. In the "Observations" Garcia made an unprecedented application of the theory of sound production of reeds to the human vocal instrument. He theorized human voice production to take place "by the compressions and regular explosions of the air, or the successive and regular explosions which it produces in passing through the glottis."⁵² In 1862 Hermann Helmholtz was destined to concur in a description of the voice in his chapter on reed pipes:

⁵⁰St. Clair Thomson, "The History of the Laryngoscope," Laryngoscope 15 (1905), 181; cited by Woglom, 89.

⁵¹Manuel Garcia, "Observations on the Human Voice," Proceedings of the Royal Society of London, 8, 13 (1855), 399-410.

⁵²Garcia, "Observations," 404.

When the voice is heard, the vocal cords act as membranous tongues, and like all tongues produce a series of decidedly discontinuous and sharply separated pulses of air, which on being represented as a sum of simple vibrations, must consist of a very large number of them, and hence be received by the ear as a very long series of partials belonging to a compound musical tone.⁵³

Garcia, however, appeared to have been more taken with physiology than acoustics. The remainder of the "Observations" consisted of plausible conjectures concerning the formation of different registers based mainly on his dissections, observations, and sensations while singing. These remarks were an attempt to assign responsibility for the varieties in glottal size and appearance to specific laryngeal muscular movements.⁵⁴ The last topic in the "Observations" concerned air pressure and its effects on phonation.⁵⁵ This concern with the action of the glottal lips in singing eventually gave birth to Garcia's teaching emphasis on efficient phonation, embodied in the concept of the coup de glotte.⁵⁶

The 1856 edition of Part I, following soon after the "Observations," was abridged both in approach and detail. In spite of his enthusiasm for his recent discoveries, Garcia apparently wished to keep his Traité on the level of

⁵³Hermann Helmholtz, On the Sensations of Tone as a Physiological Basis for the Theory of Music (1862); reprint of 1877 ed. (New York: Dover Publications, 1954), 103.

⁵⁴Garcia, "Observations," 405-409.

⁵⁵*Ibid.*, 409.

⁵⁶See p. 31 of this study.

the average reader. Physiological material in the later edition was more elementary and more concise. Specifically, the descriptions of the lungs and trachea in the earlier edition were omitted, leaving a brief explanation of their function. The cartilages of the larynx were not mentioned and only a description of function at the glottis essentially remained.⁵⁷

Sections of the Traité which showed the most obvious influence of the "Observations" were those devoted to formation of sound at the glottis, registration, and formation of timbres. These sections were elucidated by distinct references to glottal movements quite obviously observed during the author's use of the laryngoscope while singing.⁵⁸ By comparison, similar descriptions in the earlier Mémoire and first edition of the Traité were restricted by necessity to exterior laryngeal movements which accompany phonation and singing of ascending and descending passages.⁵⁹ Although the thrust of Part II was style and performance practice, indications of Garcia's teaching procedures are evident in the work. A comparison of the 1872 edition with that of 1847 reveals the influence of the "Observations." Subsequent discussions will treat these areas of contrast.

Hermann Klein, who edited Garcia's last publication,

⁵⁷ Manuel Garcia, The Art of Singing, Part I. Boston: Oliver Ditson Co., (1856?), n.d., 5-7.

⁵⁸ Ibid., 7.

⁵⁹ Garcia, A Complete Treatise (excerpts), xxxviii-xli.

Hints on Singing, disliked his teacher's choice of titles.⁶⁰

Garcia's selection of words seemed to designate a much more concise version of his method than was actually the case.

Hints on Singing, published when Garcia was ninety, slightly revised some of his teaching principles in light of his long experience.⁶¹ In Klein's words:

The contents of this volume consists of a great deal more than mere 'hints.' Apart from being his last word on the subject, they embody all the profound knowledge, the penetrating observation, the rich experience, the logical deductions and conclusions of three-quarters of a century of active devotion to the study and practice of vocal science.⁶²

Garcia's preface to the work stated his desire to bring his Art of Singing up to date with the cumulation of years of research and experience. He took appropriate pride in his discovery of the laryngoscope, but stated that its use and a knowledge of anatomy and physiology may be of more value to teacher than pupil.⁶³ A further paragraph did more than lament the current taste and "decadence" in the art of singing. It offered insight into Garcia's goals and approaches:

I have also added several exercises to give the

⁶⁰M. Sterling Mackinlay, Garcia: The Centenarian and His Times (Edinburgh: W. Blackwood, 1908; reprint ed., New York: Da Capo Press, 1976), 259.

⁶¹Manuel Garcia, Hints on Singing ed. Hermann Klein (New York: E. Ascherberg and Co., 1894). Although several references give 1894 as the date of this work, Klein stated in its preface that the work had been before the public for seventeen years. See p. ii.

⁶²*Ibid.*, ii.

⁶³*Ibid.*, iii.

pupil the opportunity of applying the precepts set forth. At the present day the acquirement of flexibility is not in great esteem, and were it not, perhaps, for the venerable Handel, declamatory music would reign alone. This is to be regretted, for not only must the art suffer, but also the young fresh voices, to which the brilliant florid style is the most congenial; the harder and more settled organs being best suited for declamation.⁶⁴

Hints on Singing, unlike Garcia's other publications, adopted a question-and-answer approach, "endeavoring to foresee the difficulties likely to occur to an earnest student."⁶⁵

Part I of Hints consisted of anatomical drawings, descriptions of function, and discussions of matters of vocal technique; registration, voice qualities, attack, breathing, and exercises to accomplish these ends. Part II was devoted to articulation, phrasing, expression, and the various styles of singing.

A Categorical Description of Garcia's Teaching

Differences of opinion have long existed concerning Garcia's position in the history of voice teaching. David C. Taylor, writing in 1915, and Arnold Rose, in 1962, declared Garcia to be an initiator of a new objective method or a "scientific school."⁶⁶ On the other hand, Charles Lunn, writing in 1900, and Robert Donington, as late as 1974,

⁶⁴ Ibid., iv.

⁶⁵ Garcia, Hints on Singing, iv.

⁶⁶ Taylor, 57-58; Arnold Rose, The Singer and the Voice (London: Faber and Faber, 1962), 28-29.

regarded Garcia to be the last teacher of the bel canto line.⁶⁷ Donington further declared Garcia's pupil Mathilde Marchesi to be "the beginning of the end."⁶⁸ The inevitable conclusion drawn by writers of the latter persuasion was that a major factor in Garcia's success was his reliance upon the bel canto method given him by his father. A comparison of the two scientific works, the Mémoire and the "Observations," with Parts I and II of the Traité and Hints on Singing reveals those teaching areas which were most influenced by his scientific research. The dominant influences on other pedagogical areas may be relegated to another source, possibly the bel canto tradition.

Three areas of interest are dominant in the two scientific works, the Mémoire and "Observations," and their influence on Garcia's pedagogical publications is evident. These are the coup de glotte, registration, and voice qualities. In each of these three areas he was impressed with the physiological data of his research and used this material in his pedagogical writings to justify theories and procedures. All three areas can be traced through his publications.

⁶⁷ Lunn, 174-77; Robert Donington, A Performer's Guide to Baroque Music (London: Faber and Faber, 1974), 60-62.

⁶⁸ Donington, 62.

The coup de glotte

Although concepts of efficient, well-coordinated attack or phonation had long been a part of singing pedagogy, Garcia's terminology, if not his entire approach were unique.⁶⁹ The term coup de glotte was obviously a product of his fascination with the action of the vocal organs in the creation of human sound. The description in the 1847 Traité, Part I, is perhaps the most complete:

. . . the lower jaw should be allowed to fall by its own weight, while the corners of the lips retire slightly . . . The tongue should be loose and motionless, without any attempt to raise it at either extremity; the muscles of the throat should be relaxed . . . The pupil being thus prepared, should draw in breath slowly, and then produce the sounds by a neat, resolute articulation or stroke of the glottis, upon the broad Italian vowel A(a). If this movement be properly executed, the sound will come out bright and round . . . The glottis is prepared for articulation by closing it, which causes momentary accumulation of air below; and it is then opened by a sudden and vigorous stroke, similar to the action of the lips when strongly emphasizing the letter P. (Art of Singing, Part I, 11.)⁷⁰

Eight years later Garcia found confirmation of his theory of glottal attack in his laryngoscopic observations.

⁶⁹Richard Miller, English, French, German and Italian Techniques of Singing: A Study in National Tonal Preferences and How They Relate to Functional Efficiency (Metuchen, New Jersey: Scarecrow Press, 1977), 1-6.

⁷⁰Hereafter, references to all material appearing in pedagogical sections of this work will be cited in two ways. Material drawn directly from writings and methods of the particular teacher will be cited in parentheses in the text. Material drawn from all other types of publications for comparative purposes and additional information will be cited in footnotes.

In a discussion of air pressure in the "Observations," he stated:

The intensity of the sound can only depend on the quantity of air which goes to each sharp explosion. I say sharp explosion, as an express condition: the glottis should close itself perfectly after every vibration; for if the air found a constant passage, as in the notes of falsetto, then the greatest movements of the glottis, and the greatest waste of air, would produce precisely the weakest notes. ("Observations," 409.)

Controversy concerning the coup de glotte abounded during the latter part of the nineteenth century. The most vocal opponents were apparently Paris teachers, chief among them being the baritone Victor Maurel. In 1892 Maurel attacked the concept in lecture sessions and newspapers. While Klein did not defend the coup de glotte in detailed terms, he believed that Maurel attacked the concept from a viewpoint of misunderstanding and misdirection, and exaggerated its use in singing.⁷¹

Two years later in Hints on Singing, the section on glottal attack was enlarged to further support the coup de glotte. Garcia here defined it as being similar to a cough, but essentially different because it only requires "delicate

⁷¹Hermann Klein, Thirty Years of Musical Life in London (New York: The Century Co., 1903), 370-371.

action of the lips and not the impulse of air."⁷² (Hints, 13.) Garcia further suggested trying the stroke with the mouth shut in order to sense the "lightness of the movement." (Hints, 13-14.) While Garcia suggested the importance of physical feeling in sensing the stroke, his pupil Klein, in attempting to explain the stroke in acceptable terms, appeared to contradict by adding that there should be only "mental cognizance, not an actual physical sensation." (Hints, 13.) Neither should it be felt in the throat, nor should the cough analogy be taken beyond its use as an aid "in locating the position and realising the functions of the glottic lips." (Hints, 13.) Throughout both Part I and Hints occasional reminders occur that the coup de glotte is a necessary prerequisite for the development of other areas of singing technique.

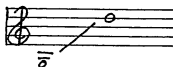
Registration

Garcia's interest in the tonal characteristics of various voice registers was not unprecedented. One of the

⁷²Garcia may be applying the term coup de glotte here to what is currently known as the soft attack. In an effort to explain himself, Garcia actually used an inaccurate rationalization. In current terms, "cough" cannot refer to the same action as "delicate action of the lips and not the impulse of air," since a cough is a hard attack requiring an extreme degree of explosion of the vocal folds. See Zemlin, 114-115, and Richard Luchsinger and Godfrey E. Arnold, Voice-Speech-Language. Clinical Communicology: Its Physiology and Pathology (Belmont, California: Wadsworth Co., Inc., 1965), 85-86.

first references to this phenomenon occurred in 1200, when Jerome of Moravia urged singers not to intermingle "different kinds of voices . . . whether it be chest with head or throat with head."⁷³ The teachers of the bel canto period in particular spent a great amount of time teaching students to blend various areas of their voices and to use the different registers with taste.⁷⁴

In the *Mémoire*, Garcia delineated three registers, chest, falsetto-head, and contra-bass. He treated chest and falsetto-head in detail, noting that within the range g to d^2 for all voice classifications either register may be used. (*A Complete Treatise*, xxvi.)

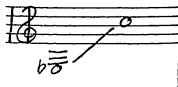


The chest voice alone proceeds below this compass, and the falsetto-head alone lies above it. The quality of the chest voice in women was noted to be penetrating and

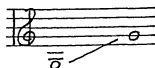
⁷³William James Henderson, *Early History of Singing* (London: Longmans, Green and Co., 1921), 28-29.

⁷⁴Deasy, 112-125.

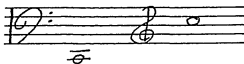
brilliant with a compass which may include the interval of a 13th:



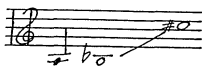
but normally should be much more restricted:



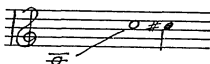
With men, Garcia found the chest to be loud, round, and clear and to encompass two octaves. When the chest notes possible in male voices are combined in a single compass, the following is the result: (A Complete Treatise, xxx.)



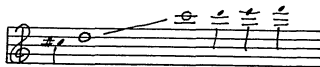
Apparently the term falsetto-head was in use by singers and teachers before Garcia. According to a footnote in the Mémoire, Garcia tolerated the term in introductory material but later found it problematical. (A Complete Treatise, xxv.) He subsequently split the designation and, curiously, used falsetto to designate the following compass in female voices: (A Complete Treatise, xxxi.)



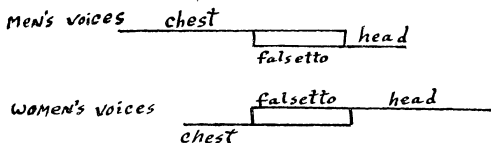
According to Herman Klein, the falsetto was an archaic term for the medium register of the female voice. It was used in this way by Garcia and his contemporaries "because its mechanism corresponds to that of the acute falsetto sounds which the male voice is capable of producing." (*Hints*, 8.) Garcia designated the qualities of the falsetto in both men and women as being weak, covered, similar to the low tones of the flute and of similar compass: (A Complete Treatise, xxxi.)



Garcia reserved the term head voice for that distinctive and brilliant part of the woman's voice encompassing:



and a much smaller range in men. He found that men generally lose the head voice during the voice change, although a few may retain the first major third. Garcia used the following diagram to summarily designate register extents: (A Complete Treatise, xxxii.)



Garcia then left the subject of registration to explain two rather unusual types of production. His description of the contra-bass register as used by the Russian basso profundos may well be that type of production called today the vocal fry. His description and that of current voice scientists are comparable.⁷⁵ (A Complete Treatise, xxxiii.) The other type of production concerned inspiratory voice, or phonation as air is inhaled into lungs. (A Complete Treatise, xxxiv.)

Garcia closed the section on registration with a statement which implied, if not his ongoing intention, at least his curiosity in the physiology of vocal registration:

⁷⁵A current description of the vocal fry may be found in Zemlin, 197-198.

According to the physiologists, the sounds are produced when the air contained in the lungs exits, by the result of its action on the lower ligaments of the glottis. The reduction of the ventricles, the reduction of the capacity of the larynx and the tension of the walls of the vocal tube adapt themselves to the contraction and progressive tension of the vocal ligaments. Until the present, only the production of the chest register has been explained by these principles. The falsetto-head register has been treated only imperfectly; that of the contra-bass has not been studied. (A Complete Treatise, xxxv.)

The next major development in Garcia's theory of registration was embodied in the "Observations." Here he was concerned with the specific mechanism of each register as observed with the laryngoscope, or by dissection.

He observed that the chest register was produced by a completely closed glottis, including the intercartilaginous portion. He found that the lateral cricoarytenoid muscles bring the vocal processes into deep contact and thereby increase the resistance of the glottis to the air pressure:

It is to the extent of this resistance that we attribute the formation of the chest-register, so distinct by its particular amplitude. To it we attribute also the slowness of the beats of the glottis, and the consequent low pitch of the sounds, a pitch which, even in the highest tenor voices, is at least an octave lower than the head notes of ordinary sopranis. ("Observations," 408.)

The falsetto was also found to be produced with a closed glottis, but with the external fibers of the lateral cricoarytenoid muscles remaining inactive. Due to action of the thyroarytenoids, the glottal lips make contact only

by their edges and offer little air resistance. Herein lies the reason for the weakness or "veiled" quality of these sounds which Garcia reported in the Mémoire.

In the experiments which he conducted for the "Observations" while using his own voice, Garcia found the male head voice to begin around c^1 , where the glottis begins to vibrate exclusively by the ligaments. The cricothyroid muscle exerts increased tension on the vocal ligaments and an acceleration of their movement takes place.⁷⁶ ("Observations," 408-409.)

The bulk of the "Observations" was devoted to an analysis of chest and falsetto production. Differences between the two registers were found in glottal length and efficiency. Garcia observed the glottis in falsetto to be longer than the chest for the same pitch, looser with resultant air-waste, and its elliptic surface to be greater.⁷⁷ ("Observations," 403-405.)

⁷⁶This description of the head voice is comparable to the physiology currently associated with falsetto production. It has been established that the cricothyroid muscle bears the chief responsibility for falsetto production. See Luchsinger and Arnold, 75.

⁷⁷Experiments conducted in 1972 confirm Garcia's description. In a study of the intrinsic laryngeal muscles, it was found that, in shifting from high chest voice to low falsetto, a generalized relaxation of all laryngeal muscles takes place. As pitch is increased in falsetto, however, greater overall muscle activity takes place. See Thomas Gay et al., "Electromyography of the Intrinsic Laryngeal Muscles During Phonation," Annals of Otolaryngology, Rhinology, and Laryngology, 81 (1972), 406.

In the 1856 Art of Singing Garcia drew upon the Mémoire for introductory material on registration and the "Observations" for explanation of their physiological cause. Garcia's developed table of register ranges for each voice classification is found in Figure 1 of this work as it appeared in the Art of Singing.

Some new material on glottal action in upper notes appeared in the Art of Singing for the first time:

It sometimes happens, that when the female soprano voice attempts to sound the notes si₄ and do₅ [b³ and c⁴], it unconsciously rises to re₅ and mi₅ [d⁴ and e⁴], in a thin but pure tone, and with less effort than would be required for trying the notes below. (Art of Singing), 6.)

Garcia's explanation of the mechanism for this phenomenon is comparable to that which physiologists currently describe as "damping" the glottis. The posterior portions of the vocal folds are firmly approximated, leaving a small chink through which the air escapes. Current laryngoscopy has shown us that in males the small aperture vibrates at a high rate of speed, producing what is today called the falsetto. In females, however, no vibration occurs at the chink. Rather, the high pitch is created by the escape of air between the folds, hence the term "whistle" register for this mechanism.⁷⁸ Garcia, limited at the time by crude instruments, claimed vibrations at the chink for both males and females.

⁷⁸Zemlin, 195-196.

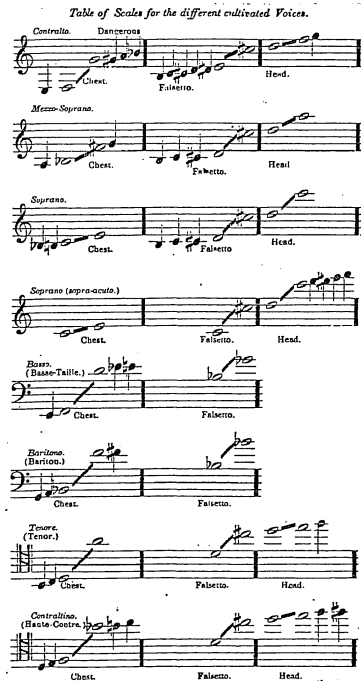


FIGURE 1: GARCIA: REGISTER RANGES FOR EACH VOICE CLASSIFICATION. From Garcia, *Art of Singing, Part I*, 9.

Garcia's conclusions on the mechanism and use of the upper male voice are less clear. In reference to the male head voice he stated

With men, the head sounds exist only as a mere remnant of the boy's voice, and are at best but a poor resource. The Italian public attach no value whatever to them; nor can they be employed, unless in exceptional cases by very high tenor voices and what are called buffi caricati. All other male singers do wrong to use them. (Art of Singing, 6.)

His opinion of the falsetto seems equally low: "Falsetto notes can be produced with nearly as much facility by baritone, tenors, and countertenors, as by female voices; but male singers will derive little advantage from their use." (Art of Singing, 9.) However, he valued the falsetto as a practice device and stated that it "would serve to give clearness to the high notes of the bass, and will enable tenor voices to extend the compass of their chest register, and sing the high notes in mezza voce." (Art of Singing, 7.) Years later, in Hints on Singing, Garcia's opinions had moderated. He found chest, falsetto (in Hints it is called the medium register), and head to be present in all male voices. He evaluated both head and falsetto, however, as remnants of the boy's voice. No opinion was given on how these registers should be used other than "the falsetto in men's voices, when good enough to be used, has the same extent as in women's." (Hints, 10-11.)

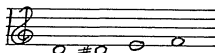
The unification of the various qualities of each voice register into an instrument of quality consistent

throughout the scale was basic to the teaching of Garcia. He described the female chest register as being strong and energetic, the falsetto or medium as being weak and "veiled," and the head as having power and brilliance. In men he found the chest register to predominate through most of the range. To Garcia, blending of the registers was much more critical in women's voices. (Hints, 8-10.)

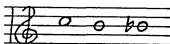
To accomplish this unification, Garcia advised singers to begin in chest voice and use sustained note-by-note vocalization with the coup de glotte until all notes of the chest and falsetto were equal in strength. For the lower notes of the female falsetto, which were generally weak, he recommended attacking on the clearer tones above the troublesome note, then descending to the lower note by a slur. For equalization and blending of falsetto and head, he urged the use of "close timbre"⁷⁹ with [a] and [o] vowels for the upper notes. The result was an arched palate which equalized the upper notes of the falsetto with the rounder qualities of the lower head. Garcia emphasized that higher pitches in the voice should be exercised judiciously and sparingly and always approached as a part of a rapid vocalizing pattern rather than by sustained notes. (Art of Singing, 11-12.)

⁷⁹This term is apparently synonymous with "somber timbre." See p. 55.

Garcia found the establishment of the chest voice to require only a few days, after which concentration on union of the chest with the falsetto could take place. The procedure here was to sing the following notes alternately in one register and then the other:

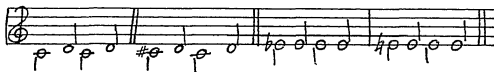


He urged slow, energetic execution. For joining falsetto and head, he recommended use of the pharyngeal conformation for closed timbre, that is, the arched soft palate and a "tightly pressed" larynx, as in the pronunciation of the Italian [i]. (Art of Singing, 12.) If the chest register in women had been carried too high in the scale, thereby weakening the falsetto, Garcia recommended the reverse procedure. Carefully attacked and sustained practice of the notes



took place until these were well-established in the falsetto register. Lower pitches were then added. (Hints, 15.)

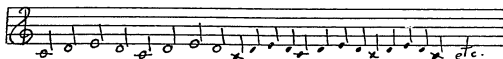
A large group of exercises in the Art of Singing and Hints on Singing were devoted to progressive unification of the registers. The exercises were designed to achieve this purpose in both male and female voices, the only difference being key transpositions as needed. The first exercises in both works consisted of alternately singing with chest and head in the same pitch region. (Art of Singing, 15; Hints, 21.)



These were followed by ascending and descending slurs which included all diatonic intervals in the middle of the vocal range. (Art of Singing, 15.)

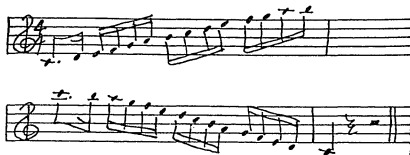


Progressive scalewise passages were designed to build unity from the lower notes up.

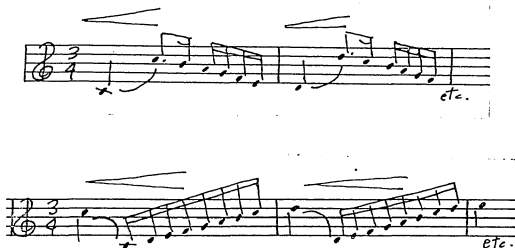


Subsequent exercises followed the same design, adding the fourth, fifth, sixth, and seventh. (Art of Singing, 16.)

With the octave scale and beyond, more rapid exercises were developed to a two-octave compass. (Art of Singing, 17.)



The next step was to negotiate ascending and descending slurs in combination with the scale. (Art of Singing, 18.)



Various combinations of scalewise passages were followed by ornamented scalewise passages, ascending and descending, progressing from "exercises of two notes," (Art of Singing, 18.)




to "exercises of sixteen notes,"



and thirty two notes. (Art of Singing, 26.)



The mark of achievement was to be able to sing the 140 exercises in the first section of the Art of Singing, comprising all combinations of scales, intervallic passages, and slurs, on any of the Italian vowels at  = 120, "giving equal strength and clearness to all the notes." (Art of Singing, 28.) This thorough and painstaking approach was basic to Garcia's procedure and may well have been a factor inherited from the Italian traditions in which Garcia's father was trained. Garcia's sister, Pauline Viardot-Garcia, was reported to have used "the colorature exercises upon which Italian singing was built, upon which Garcia trained Jenny Lind, Malibran, and Pauline Garcia herself."⁸⁰ While not all of Viardot-Garcia's exercises were exactly the same as those in the Art of Singing, the procedure was consistent with Garcia's. The scale was built from the bottom up by progressively adding notes. Various combinations of intervallic passages were followed by octave slurs combined with descending scales.⁸¹

While Garcia's last publication, Hints on Singing, did not devote as much space to detailed vocalises as the

⁸⁰Anton Seidl, "The Colorature Teaching of Madame Viardot-Garcia," The Music of the Modern World 2 (New York: D. Appleton and Co., 1895), 208.

⁸¹Ibid., 209.

Art, its procedure was consistent with those of the Art and of Viardot-Garcia. The only difference was that register and scale exercises in Hints were all placed within the octave or ninth, while those in the Art sometimes encompassed two octaves and stressed more work in the upper range. Garcia provided no explanation in Hints for this apparent shift of emphasis to the middle voice.

Resonance and Vowel Color

Resonance was a second dominant concern of Garcia, as realized in his work with voice qualities or timbres. In the Mémoire his definition of timbre was "the peculiar and infinitely variable character which each register, each tone can take." (A Complete Treatise, xxxv.) His main concern was not with the different timbres which characterize individual voices, but with timbre modifications possible in all singing voices. These he reduced to two principal types: clear timbre and sombre timbre. In the Mémoire the timbres were treated by registers. Clear timbre gives "lustre" and "brilliance" to the chest register. He cited specific cases where known singers employed this quality in the chest, among them the famous instance of Gilbert Duprez's high C in Guillaume Tell. Garcia further warned that excessive use of clear timbre with chest register will "make the voice shrill and yelping." (A Complete Treatise, xxxvii.) Sombre timbre in chest register gives "penetration" and "roundness" to the sound. It makes the

voice capable of more volume, but, used to excess, "covers the sounds, stifles them, makes them muffled and raucous." (A Complete Treatise, xxxvii.) When clear and sombre timbres are used in falsetto the qualities are distinguishable, but not as much as in the chest register. In head register the result is much the same as in falsetto, although Garcia found that in some voices the resulting qualities were "pure and limpid like the sounds of a harmonica." (A Complete Treatise, xxxviii.)

From exterior observations of the larynx, Garcia reasoned that the pharyngeal shapes and volumes resulting from different laryngeal movements and corresponding movements of the velum are the major influencers of timbre. He described in detail how the larynx rises as the voice ascends the scale in clear timbre in all three registers. In sombre timbre he found the larynx to remain fixed rather low throughout the scale in chest and falsetto registers, while in the head register it rises rapidly. (A Complete Treatise, xl-xli.) A very perceptive observation of the singer's control over resonance followed:

The changes in form which the pharynx can receive being due to the action of the velum and tongue, it is especially to the movements of these two organs that the attention of the singer should be paid. (A Complete Treatise, xli.)

In clear timbre, Garcia found the throat to contract between velum and larynx, accompanied by a lowered velum and raised larynx. Use of the vowels [a] , [ɛ] and [ʔ]

results in the conformation of the vocal organs for clear timbre. For sombre timbre, the throat elongates, caused by a lifting of the velum and lowering of the larynx: "The sound is heard full, round and covered; it is what is called mixed voice, or sombre timbre." (A Complete Treatise, xliv.) The vowels [e] , [o] , and [u] bring about the conformation of the vocal tube for sombre timbre. (A Complete Treatise, xliv.) The physiological disposition for these vowels became fundamental for Garcia's theory of vowel modification in a later work.⁸²

A treatment of objectionable voice timbres was included in the Mémoire. "Gutternal timbre" is caused by broadening of the tongue at the base and corrected by grooving the tongue to various extents for each vowel, noting, however, that "the tongue, which is particularly charged by its movements to transform the voice into vowels, will have to move itself especially by the lateral edges, weakly by the middle, and not at all by the base."⁸³ (A Complete Treatise, xlvi.) "Nasal timbre" results from directing the sound into the nose instead of the oral cavity. "Harsh timbre" can be caused by separation of the

⁸²See p. 59.

⁸³Garcia's exact meaning is unclear. No other detailed description of tongue movements was found in his writings.

pillars of fauces, lifting of the tongue tip, swelling of the tonsils, and excessive use of air while singing.⁸⁴
(A Complete Treatise, xlvi-xlviiii.)

In the 1857 edition of Part I, Garcia seemed more impressed with the variety of colors of which the human voice is capable:

Every change of timbre of which all sounds are susceptible, originates in a corresponding change of the tube of the pharynx; and, as this flexible tube is capable of undergoing countless varieties of form, it follows that the modification of all sounds are also numberless. (Art of Singing, 10.)

The 1847 edition of Part II utilized considerably more detail on the physiological processes involved in various timbres than the Mémoire or Part I. Although much of this material was conjecture and somewhat erroneous, it was surprisingly detailed for theories set down eight years before Garcia was to view the vocal folds with the laryngoscope. In brief, he associated the following physical factors with a "brilliant" timbre: arytenoids brought closely together, a narrow glottal opening, and a contraction of the pharyngeal tissues. With a "veiled" or breathier quality, he associated separation of the arytenoids, a glottis shaped like an isosceles triangle, a softness of the pharyngeal tissues

⁸⁴According to Garcia, therefore, "harsh timbre" can be described as the result of physical obstructions to the sound or of inefficient coordination between the glottis and air flow. "Separation of the pillars of fauces" does not appear to be consistent with the other actions.

resulting in poor reflection, and dull weak sounds. (A Complete Treatise, Part II, 152-153.)

Only a paragraph in the "Observations" was devoted to the production of voice qualities. Garcia listed the simultaneous causes of quality change as:

1, according as the glottis partially or entirely closes the passage between explosions, it produces veiled or brilliant sounds; 2, the tube which surmounts and surrounds it also greatly affects the quality of the voice; by its contractions it gives brilliancy to it and its widening volume; 3, the epiglottis also plays a very important part, for every time that it lowers itself, and nearly closes the orifice of the larynx, the voice gains in brilliancy; and when, on the other hand, it is drawn up, the voice immediately becomes veiled.⁸⁵ ("Observations," 410.)

That Garcia's theory of the formation of qualities was still evolving is evident. The "Observations" used the terms "brilliant" and "veiled" instead of clear and sombre. "Veiled," however, also had a connotation of breathiness. The epiglottis as a participant in creation of voice qualities did not appear again in Garcia's writings.

⁸⁵ Current science has found no evidence that movements of the epiglottis influence voice quality. See Tsutomu Chiba and Masato Kajiyama, The Vowel: Its Nature and Structure (Tokyo: Phonetic Society of Japan, 1958), 31-34. Appelman noted variations in the position of the epiglottis during production of front and back vowels within a moderate pitch range. These variant positions, however, were found to be associated with changes in the vestibular opening above the glottis. See D. Ralph Appelman, The Science of Vocal Pedagogy: Theory and Application (Bloomington: Indiana University Press, 1967), 78-79.

Garcia's mature theory concerning voice qualities appeared in Hints on Singing. It further clarifies his classification of qualities. While the terms timbre clair and timbre sombre were assigned to those qualities resulting from adjustments of laryngeal position and of spaces above the larynx, the terms "ringing" and "dull" were applied to results of actions within the glottis itself. "Ringing" referred to sounds produced from complete glottal closure and "veiled" to sounds produced by incomplete glottal closure and the resulting presence of breath in the sound. (Hints, 7.)

. . . the ringing and dulness of sound is, in effect and mechanism, completely distinct from the open and closed timbres. The ringing and dulness [sic] are produced in the interior of the larynx, independently of the position high or low of the organ, while the open or closed qualities of the voice require the bodily movement of the larynx, and of its antagonist the soft palate. Hence, any timbre may be bright or dull. (Hints, 12.)

The timbres themselves, described as clear or open and dark (somber) or closed, are produced by movements in opposite directions of larynx and soft palate. In Hints on Singing vertical sections are used to describe the two positions, as shown in Figure 2.

The physiological causes of the vowel were interesting but troublesome for Garcia. In one section of the 1847 Part II he attributed pure vowels to two mechanisms: alterations in the length and diameter of the vocal tube in proportion to laryngeal and pharyngeal movement, and

Open--Timbre Clair (Bright)



Vertical section from the front to the back of the head, showing depression of the soft palate and a high position of the larynx.

Closed--Timbre Sombre (Dark)



Diagram of the same parts, showing the soft palate raised and the larynx depressed.



The space between the tongue and the palate as seen through the mouth during the production of the clear (or brith) timbre.



The space between the tongue and palate augmented during the production of dark timbre.

FIGURE 2: GARCIA: MOVEMENTS OF THE LARYNX AND SOFT PALATE IN RELATION TO VOCAL TIMBRES. From Garcia, Hints, 11-12.

modifications which the tube receives in proportion to tongue movements. (A Complete Treatise, Part II, 4-5.) In a later footnote he stated that "vowels are produced exclusively by the glottis and the buccal canal, that is, the space included between the larynx and the base of the tongue and the velum." (A Complete Treatise, Part II, 7.) The latter view is particularly problematical in regard to production of front and central vowels (see pp. 211-213). Both theories were omitted from the 1872 edition of Part II.

The ability to analyze the contributions of vowel color and voice quality were of obvious importance to Garcia's teaching. He found the relationship between the two to be one of mutual dependence:

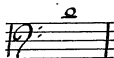
It will serve [the singer] to determine in the use of each vowel the timbre most appropriate to the effect which he intends, and will permit him to maintain at the same time a perfect equality throughout the entire compass of the voice. (A Complete Treatise, Part II, 5-6.)

In Hints on Singing, Garcia suggested an exercise for developing control over the various voice qualities within vowel colors. He recommended that, on a single sustained note, the singer pass through every timbre from the most open to the most closed, using this table to show the changes each vowel should undergo:

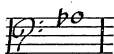
A approximates to o
E approximates to eu in French
I approximates to u in French
O approximates to u in Italian (Hints, 12.)

The necessity for vowel modification in equalizing the vocal scale appeared as early as Part I, when Garcia

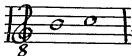
noted a need for the student to slightly close the vowel on ascending slurs, (Art of Singing, 12.) and for men to abandon the clear timbre for closed timbre on reaching



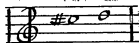
Basses should begin to round gently at



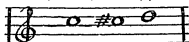
and tenors at



If the sounds are "thin and child-like," female voices should close the vowel by arching the soft palate, [a] becoming [ʔ] . This process was a part of Garcia's approach to equalization of falsetto and head registers. It was to be applied to the extreme notes of the falsetto



so that these would not form too great a contrast to the first notes of the head. (Art of Singing, 11.)



In Part II is found Garcia's first systematic delineation of a theory of vowel modification. Generally, he recommended moderate and progressive rounding of the vowel as the voice ascends and "clarifying" or brightening of the vowel as the voice descends. He applied this procedure to specific vowels as follows:

In ascending:
 [a] approaches [ɔ] ;
 [ɛ] approaches [e] , then [ø] ;
 [i] approaches [y] without the help of the lips;⁸⁶
 [o] approaches [u] .

In descending, the vowels are brightened by a reverse procedure, for example:

[u] approaches [o] ;
 [ɔ] approaches [a] .
 (A Complete Treatise, Part II, 7-8.)

Garcia's pedagogical approach to voice qualities and vowel production always included the concept of the loose jaw. He warned against opening the mouth too much or too little and against excessive lip protrusion.⁸⁷ In noting the importance of the loose, relatively uninvolved jaw in vowel production, Garcia was not above employing an

⁸⁶The exact meaning is unclear. [y] cannot be successfully pronounced without lip rounding. See p. 60.

⁸⁷See p. 60.

inanimate device. To correct jaw stiffness, he suggested the placing of a piece of wood or cork between the jaws on each side, or tying a ribbon below the lower lip and behind the neck, then having the student practice pronouncing all vowels with the least possible effort. Furthermore, he urged that the Italian [a] , [ɛ] and [e] be produced without lip participation, the latter factor being reserved only for narrow dark vowels such as [o] , [ɔ] , [u] , and [y] . In addition to adding ease and clarity to vocal production, such procedures will "prevent those abrupt transitions from one timbre to the other which resemble the barking of a dog." (A Complete Treatise, Part II, 7.)

Garcia's philosophy concerning the use of vowels held for that of consonants as well. He insisted that the singer carefully analyze the mechanism which produces vowels and consonants. If the singer does not follow this procedure,

. . . he does not know the secret of keeping in the voice the development and equality which he would obtain in simple vocalization, and he cannot use to his taste the proper timbre for the emotion he would express. (A Complete Treatise, Part II, 2.)

Garcia was concerned enough about articulation in general that an entire chapter of Part II was devoted to its mechanism and use in interpretation. In these chapters he carefully classified the consonants into two types, explosive and sustained, and into five families according to physiological production: labials, labio-dentals, lingua-

dentals, linguo-palatals, and linguo-gutturals.⁸⁸ (A Complete Treatise, Part II, 12-15.) He continually urged that the student be made fully aware of the articulatory movements involved in production of all consonants in order that movements be restricted only to "indispensable organs" and that these organs be restrained to "the simplest and most natural action." (A Complete Treatise, Part II, 15.)

Breathing

Jenny Lind once remarked in her correspondence that Garcia was "very particular about breathing."⁸⁹ It is reported that Garcia's breath method was the same as that passed to him by his father from Anzani.⁹⁰ If this is true, it may easily have been a part of the family vocal tradition. His sister Pauline began every lesson with breathing exercises in which "the full breath so filled the lungs that the chest became elevated and distended with air, while the muscles of the abdomen drew in slightly."⁹¹ Garcia himself urged in Part I that the

⁸⁸The current term for linguo-guttural is linguo-velar.

⁸⁹Joan Bulman, Jenny Lind: A Biography (London: James Barrie, 1956), 42.

⁹⁰Lunn, 94.

⁹¹Seidl, 208. "Drew in" may have implied abdominal retraction.

diaphragm be lowered without a jerk and that the chest be slowly raised. (Art of Singing, 10.) In 1901 he told Anna Schoen-René, an American teacher, that while the foregoing method was useful for women, "lumbar breathing" was necessary for male singers.⁹² In Hints on Singing this method was called thoracic or intercostal breathing and was insisted upon for all voices. It was described as a lateral expansion of the lower ribs during inhalation. (Hints, 4.)

Whatever the contradictory evidence concerning physiological location of breathing activity, Garcia's exercises for achieving breath control in Part I and Hints on Singing were virtually the same:

First.--The pupil should gently and slowly inhale for a few seconds, as much air as the chest can well contain.
 Secondly.--After taking a deep breath, the air should be exhaled again very gently and slowly.
 Thirdly.--Fill the lungs, and keep them inflated for the longest possible time. And,
 Fourthly.--Exhale completely, and leave the chest empty as long as the physical powers will conveniently allow. (Art of Singing, 10.)

In Hints on Singing, however, the exercises omitted any reference to the chest as a repository of inhaled air:

1. Draw a breath slowly through a very minute opening of the lips, then exhale freely.
2. Breathe freely and exhale slowly through the same small opening.
3. Breathe freely and retain the breath during ten seconds or more. (Hints, 5.)

⁹²Anna Eugenie Schoen-René, America's Musical Inheritance: Memories and Reminiscences. (New York: G.P. Putnam's Sons, 1941), 104.

Garcia continually urged that breathing should be a free, efficient process, under full control of the singer:

No persons can ever become accomplished singers, until they possess an entire control over the breath--the very element of sound. (Art of Singing, 10.)

The lengthy coloraturas and phrases in the music for which Garcia prepared his singers might suggest that his performers had extraordinary breath control. In Part I, however, he suggested that his exercises be sung slowly at first with breaths after the first note of every bar. In subsequent repetitions, the tempo was allowed to gradually increase and breaths became less frequent. (Art of Singing, 13-14.) In performance situations he advised breaths at judicious places: within longer notes of passage, between two consecutive consonants with a noiseless inhalation through the nose, and during a percussive attack in the accompaniment. (A Complete Treatise, Part II, 69.) In performing in large halls, he taught his singers to use the breath for reinforcing the voice by supplying a continuous air current: "Only a regular and sustained thrust can set the air contained in a large hall into motion and make it resonate." (A Complete Treatise, Part II, 175.)

Coordination of the breath with phonation was an ever-present part of Garcia's breath method. Klein found that Garcia's first rule "was ever to repress the breathing power and bring it into proper proportion with the

resisting force of the throat and the larynx."⁹³ Garcia found a lack of coordination to result in the scrocco di voce, couac or "squawk," which occurs in the chest tones above e¹ for tenors and an octave higher in the soprano head voice. If support is neglected for these notes, at the moment of phonation, "the pharynx and the glottis, naturally forced to contract in order to produce these high notes, close completely, and the voice stops suddenly in order to reappear an instant later with an exaggerated or ridiculous explosion." (A Complete Treatise, Part II, 29.) In a later passage he suggested that, to avoid the couac on high notes, the singer use words with consonants which use a "light, internal sound" (i.e. [m] , [n] , [d] , [b]). This allows the note to be attacked accurately and efficiently. (A Complete Treatise, Part II, 45.) A further concept of coordination was that of teaching the singer to distinguish between the four principal mechanisms, lungs, glottis, pharynx or velo-pharyngeal mechanism, and organs of articulation. Successful singers were those who could coordinate these mechanisms into one cooperative unit. (A Complete Treatise, Part II, 28.)

⁹³Klein, Thirty Years of Musical Life in London, 36.

Attitudes and Approaches in General

While no descriptions of Garcia's general approaches and teaching attitudes appear in his own writings, pupil accounts give some descriptions of these factors. Sterling Mackinlay's biography, Garcia: The Centenarian and His Times, is one of the few sources of this type of material. For Garcia, Battaille, Marchesi, and Stockhausen, these general areas tend to emphasize the length of voice study expected of the pupil, lesson arrangements, and general procedures and priorities in the training of voices.

Singing students of the early nineteenth century were expected to spend years in careful, methodical preparation. Manuel Garcia readily concurred. Voice teachers of his generation and before taught musicianship as well as singing technique in methodical and often tiresome doses. Garcia's father, his only teacher, fostered the Italian attitude that "months, indeed years, would be spent in the practice of simple solfeggi, to be followed by exercises in rhythm and studies for intonation."⁹⁴ All exercises were designed to prepare the student for performance of bel canto song. Garcia preferred to have his students progress from exercises into simple Italian arias, bypassing the more extended vocalises often used by

⁹⁴Mackinlay, 27.

teachers of his generation.⁹⁵ In Hints on Singing, exercises were provided which were preparatory for the bel canto aria.⁹⁶

Garcia taught his students only on a private basis and provided his own piano accompaniments.⁹⁷ His lesson schedule was relentless and often not well-managed. Students frequently had to wait long intervals for a lesson, only to be told by their teacher late in the day, "I am tired, children; I will see you tomorrow."⁹⁸ In his seventies Garcia was still teaching from morning until night with little opportunity for rest.⁹⁹

Garcia was forthright in his evaluations of singers. Following the audition of prospective students, he gave his immediate opinion concerning their qualifications by sending prospective students to competent physicians for a full medical examination.¹⁰⁰

Garcia's first lesson for a new student began with a careful explanation of proper voice production for singing. This explanation included breathing, phonation, resonance,

⁹⁵Ibid., 289.

⁹⁶See p. 28-29.

⁹⁷Mackinlay, 241.

⁹⁸Ibid., 162.

⁹⁹Ibid., 239.

¹⁰⁰Ibid., 114.

and diction. He then emphasized that the student must understand these principles and learn how to control and calculate their use. He told them,

. . . remember that we must have the knowledge to guide the emission of the voice with our brains. When the tone has once been emitted it is too late to correct a fault. We must be aware beforehand exactly what we are going to do. We must know what is right and how to do it. That is the secret.¹⁰¹

Following the explanations, sustained-tone exercises with an emphasis on proper breathing were used. When the pupil could sing a scale in the middle of the vocal range slowly and with control, he was ready for more advanced exercises. These exercises then constituted the sole material for vocal study for a considerable period of time.¹⁰² Even with more advanced students, Garcia relied on similar approaches. Antoinette Sterling (1850-1904), a contralto, came to Garcia from study with Mathilde Marchesi in Cologne. In this case, both pupil and teacher mutually found that concentrated work on exercises in the medium of the voice was the most satisfactory procedure for a number of months.¹⁰³

Exercises he looked on as the foundation of all good singing. These would take the form of sustained and

¹⁰¹Mackinlay, 284.

¹⁰²Ibid., 284-285.

¹⁰³Ibid., 219-221.

swelled notes, scales, passages of combined intervals, arpeggios, chromatics, and shakes. The acquirement of agility in execution, he used to say, required at least two years' study, the result being that the voice became flexible, even mellow and strong.¹⁰⁴

Disciplined, thorough work on the attainment of the even vocal scale and flexibility was basic to Garcia's method and was a fundamental part of the teaching of Battaille, Marchesi, and Stockhausen as well. Other areas of similarity and contrast are indicated in the following chapters.

In general, Garcia's basic attitude toward vocal training was always to promote freedom in all aspects of singing. He always insisted upon the term "emission" rather than "production," and pupils who used the latter term quickly learned their teacher's attitude:

Mon Dieu! How can you produce a voice? Can you show it to me and say, "See, here it is. Examine it?" Non! Can you pour it out like molten lead into the sand? Non! There is no such thing as voice-production. Perhaps you mean voice-emission. You do? Eh, Bien! Then say so, please.¹⁰⁵

While his record for improving faulty vocal instruments was good, Garcia would not accept an inordinate amount of credit for the control a teacher has over vocal training. He regarded himself only as a guide:

Do not be afraid to face a difficulty. Make up your mind to conquer it. I only direct you. If you do a thing badly, it is your fault, not mine. If you do it well, all praise to you, not to me. I show pupils how to sing, and the proper way to study.¹⁰⁶

¹⁰⁴Ibid., 289.

¹⁰⁵Ibid., 250.

¹⁰⁶Ibid., 287.

III. THE RESEARCH AND TEACHING PRINCIPLES OF BATAILLE

Biographical Material

Charles Battaille is rarely mentioned in current works on singing and vocal pedagogy. However, his contributions were extremely important to writers who described nineteenth-century artists. Sterling Mackinlay lists him among those who were, in his opinion, the most outstanding Garcia students; Mathilde Marchesi and Julius Stockhausen were also named on this list.¹ The Grove's Dictionary material concerning Battaille appears to be largely based on that in Mackinlay's book.² Two French dictionaries contemporary with Battaille's time ascribe a great deal of significance to his performance, research, and teaching. These are the principal biographical sources on Battaille.³

Battaille was born of a physician father in Nantes on September 30, 1822. Due to his father's influence he

¹Mackinlay, 156.

²Grove's Dictionary of Music and Musicians, 5th ed., s.v. "Battaille, Charles Amable," by Gustave Ferrari.

³Grand dictionnaire universel du XIX siècle, 1866-1890 ed., s.v. "Battaille, Charles Amable;" La Grand encyclopédie: inventaire raisonné des sciences, des lettres et des arts, [1885-1901 ed.], s.v. "Battaille, Charles Amable."

studied medicine in Nantes for five years and was a demonstrator in anatomy for four years thereafter.⁴ At this point references are contradictory. One source states that Battaille received his doctorate and began medical practice in his home town.⁵ Another states that, after the four years as demonstrator of anatomy, he received the Bachelor of Science at Caen and passed the first four examinations for his doctorate in Paris before leaving the field of medicine.⁶ Mackinlay adds to the confusion by stating that Battaille earned his living as a doctor of medicine while studying voice in Paris.⁷ Battaille began study with Garcia at the Conservatory in 1844. Three years later he completed his study with the Conservatory's first prize awards in song, opera, and opéra-comique.⁸ He was engaged almost immediately by the Opéra-Comique and made his debut June 22, 1848 as Sulpice in Donizetti's La figlia del reggimento.⁹

⁴Grand dictionnaire universel.

⁵La Grand encyclopédie.

⁶Grand dictionnaire universel.

⁷Mackinlay, 160.

⁸La Grand encyclopédie.

⁹Grand dictionnaire universel.

Political problems delayed subsequent performances. In fact, Battaille's debut date was marked by an insurrection. Battaille joined the guard to quell the insurgents, fought all afternoon, and made his debut that evening.¹⁰

By the end of the year Battaille had been chosen by Halévy to portray Jacques Sincere in his Val d'Andorre. Over the next nine years he was destined to create eleven more leading roles: Don Belflor in Adam's Toreador, 1849; Atalmuck in Halevy's La Fée aux roses, 1849; Falstaff in Thomas' Songe d'une nuit d'été, 1850; Matheus Claes in Grisar's Carillonneur de Bruges, 1852; Gaillard in Reber's Le Père gaillard, 1852; Torrido in Auber's Marco Spada, 1852; Peters in Meyerbeer's l'Étoile du nord, 1854; the commander in Thomas' La Cour de Célimène, 1855; Gédéon in Adam's Houzard de Berchiny, 1855; and Gilbert in Halévy's Valentine d'Aubingny, 1856.¹¹ Other roles which Battaille created or performed both at the Opéra Comique and at the Théâtre Lyrique were Osmin in Mozart's Die Entführung aus dem Serail; Roskow in Halévy's La Dame de pique; Nicolas in Massé's Les Saisons;

¹⁰Albert Soubies and Charles Malherbe, Histoire de l'Opéra-Comique: 1840-1887, 2 vols. (Paris: Flammarion, 1892, 1893), 1:181.

¹¹*Ibid.*, 291-292. Descriptions of these works and their original casts may be found in Felix Clément and Pierre Larousse, Dictionnaire des operas (Paris: Larousse, 1857).

and Mercury in Thomas' Psyché.¹² One of his last operatic roles was that of Rocco in Beethoven's Fidelio in 1860. Pauline Viardot-Garcia sang the role of Leonore in this series.¹³

Battaille's voice, a basso-profundo, was designated as "a marvelous instrument with a truly exceptional depth."¹⁴ He was acclaimed for his ability as a dramatic actor who could portray both buffo and more serious roles with great facility. The Histoire de l'Opéra-Comique named him "an incomparable magician who had everything, the voice, the physique, and the endurance."¹⁶

Battaille began teaching at the Conservatory in 1851 and continued to do so while he pursued his singing career. In 1857, what is only generally described as "a serious disease of the larynx" forced his retirement from the stage. In 1860 he returned in several of the above roles, but by 1861 he had permanently retired for the purposes of teaching and research.¹⁷

During the next nine years Battaille published the results of his research and his teaching method. He was

¹²Grand dictionnaire universel and La Grand encyclopédie.

¹³Clément, 288.

¹⁴Grand dictionnaire universel. Translated by the writer.

¹⁵La Grand encyclopédie.

¹⁶Soubies, 197. Translated by the writer.

¹⁷La Grand encyclopédie.

awarded several foreign decorations for his contributions to the performing arts and for his research and teaching. For his research in phonation he received a physiology prize from the French Academy of Sciences.¹⁸

In 1870 he again became involved in political issues. He was named sous-prefect d'Ancenis and was charged with the responsibility of organizing and arming local troops.¹⁹ He died May 2, 1872.²⁰

Bataille's Publications

Bataille had intended to publish a complete work on voice comprising seven volumes and entitled De l'enseignement du chant. Only the first two volumes were ever published, but the back flyleaf of the second volume gave the master plan for the work:

- I. Nouvelles recherches sur la phonation (1861)²¹
 - II. De la physiologie appliquée à l'étude du mecanisme vocal (1863)²²
 - III. De la respiration chez les chanteurs
-

¹⁸Grand dictionnaire universel.

¹⁹La Grand encyclopedie.

²⁰Grove's Dictionary.

²¹Charles Bataille, Nouvelles recherches sur la phonation (Paris: Victor Masson and Sons, 1861).

²²Charles Bataille, De l'enseignement du chant, vol. 2, De la physiologie appliquée à l'étude du mecanisme vocal (Paris: Victor Masson and Sons, 1863).

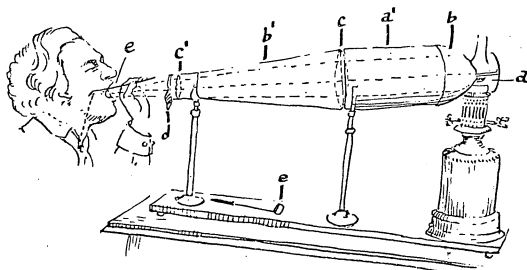
IV. Du mécanisme vocalV. Du style et de l'esthétique dans le chantVI. Traité des maladies de la voix chez les chanteurs et les orateursVII. De l'hygiène de la voix au théâtre

According to the foreword, Nouvelles recherches was designed to be a detailed report on the results of Battaille's research on the singing voice. His experiments were conducted upon himself and upon his students with the aid of his "autolaryngoscope," a version of Garcia's laryngoscope which utilized a lantern and provided an additional mirror to correct the inverted image. (See Figure 3). Battaille's foreword also gives due credit to Manuel Garcia, who "laid the foundations of a rational and precise theory based on physiology."²³

Nouvelles recherches consisted of three parts: Part I, "Anatomy," examined in detail the laryngeal parts as revealed in step-by-step dissection; Part II, "Laryngoscopy," described laryngeal movements and resultant vocal sound as observed with the laryngoscope; Part III, "Physiology," dealt with the precise function of laryngeal parts in the act of singing.²⁴

²³Battaille, Nouvelles recherches, vi. Translated by the writer.

²⁴*Ibid*, vii.



- a reflecting mirror
- a' hollow cylinder
- bb' hollow cones
- cc' biconvex lenses
- d flat mirror
- e laryngeal mirror

FIGURE 3: BATAILLE'S AUTOLARYNGOSCOPE. From Nouvelles recherches, frontispiece.

Nouvelles recherches presumed a thorough understanding of anatomy and physiology on the part of the reader. Garcia's Mémoire and "Observations" were impressive for their findings, but were not nearly as detailed or thorough as Battaille's research. While some of Battaille's conclusions were inaccurate, his presentation of such an abundance of detailed physiological material in regard to the singing voice must surely be a contribution of some proportion which has largely been overlooked in recent years.

Battaille's extract of Nouvelle recherches appeared in the Comptes rendus of the French Academy of Sciences shortly after publication of the complete work.²⁵ It summarized the portions of the complete work which its author felt were the most significant and original contributions to research. The Comptes rendus of 1863 contained a statement of praise for Battaille's research and contributions:

The commission accords a very honorable distinction to Mr. Battaille, professor at the Conservatory of Music, for his physiological and anatomical research on the human voice. With the aid of a laryngoscope, this observer has carefully studied the modifications which occur at the lips of the glottis in the production of the chest voice and head voice, and

²⁵ Charles Battaille, "Nouvelles recherches sur la phonation," (extract by the author), Comptes rendus 52 (1861), 716-722. A translation of this extract is provided in Appendix II, p. 254.

has thus contributed to the advancement of our knowledge of the theory of voice.²⁶

The second part of De l'enseignement du chant, De la physiologie appliquée à l'étude du mécanisme vocal, was submitted for approval to the Académie des Beaux-Arts on June 27, 1863. Curiously, the committee on musical composition was chosen to examine the work. This committee numbered among its constituents Auber, Thomas, Reber, and Berlioz.²⁷ Their endorsement found in Battaille's work a potential basis for the justification and systematization of the diverse teaching theories of the time.²⁸

In the first chapter of this volume, Battaille stated his intention to

bring the teaching of singing back to some precise formulae, to certain profound rules based on anatomical and physiological fact, in such a way that henceforth this original branch of lyric art may not be exploited by ignorance, routine habit, and charlatanism without retribution.²⁹

In this introductory chapter he further objected to the prevalent philosophy of vocal teaching by imitation and expressed a hope that the volume's findings would be

²⁶Comptes rendus 57 (1862), 1050. Translated by the writer.

²⁷A possible reason for this choice of committees may rest in the committee personnel. Auber, Thomas, and Reber had been rather closely involved with Battaille's singing career, each of them having chosen him to create roles in their operas.

²⁸Battaille, De la physiologie, v-viii.

²⁹*Ibid.*, 1. Translated by the writer.

accepted as a "practical criterion which will serve as a sound basis for pedagogical theory and approach."³⁰ A table of anatomical definitions and a very careful, rudimentary approach to terminology exemplified Battaille's intention of reaching the world of singing as well as the world of science with this book. In fact, his closing chapter related a desire to clarify for singers the physiological principles of Nouvelles recherches and apply them to their art.³¹

If the second volume of De l'enseignement du chant was a result of Battaille's research as delineated in the first volume, it also stood alone as a teaching method. It treated a gamut of topics from the points of view of philosophy and methodology: application of physiological laws to singing; the necessity of vocal exercise, the fusion of registers; the mechanism of the trill; respiration; and the physiological determinants of voice quality. Throughout the work are found teaching concepts which were generally consistent with Garcia's principles and which were supported by Battaille's research. The volume contained very few vocalises. Instead, it devoted much textual detail to methodology.

³⁰Ibid., 2-3. Translated by the writer.

³¹Ibid., 56.

Bataille's Research

Nouvelles recherches contains the bulk of Bataille's contributions to knowledge concerning vocal production. The areas in which he concentrated his research were those which have the most implications for the singing mechanism: phonation, registration, resonance, and respiration. An additional area included observation of the larynx during execution of the trill and the messa di voce or son file . Bataille compiled his findings under the headings of three physiological circumstances which he found were necessary for phonation to take place: "the tension of the vocal folds, the posterior occlusion of the glottis, and the current of phonatory air."³²

After delineating his observations of coordinating movements and tensions between specific muscles and cartilages, Bataille set forth the following facts concerning tension of the vocal folds:

1. The vocal folds are stretched in length and in width.
2. Longitudinal tension and external lateral tension or ventricular tension are always present. Internal lateral tension or sub-glottal tension may

³² Bataille, Nouvelles recherches, 93. Translated by the writer. Bataille's phrase is la tension des ligaments vocaux. However, it is apparent from his descriptions of glottal movements during phonation that he was referring to the vocal folds in their entirety. Bataille's references to les ligaments vocaux will henceforth be interpreted to indicate the vocal folds.

- disappear in the falsetto register.³³
3. Total or partial tension places the folds in a state of vibration.³⁴
 4. Since it may be increased or decreased by perceptible gradations, (this tension) permits the folds to engender all the pitches of the human voice, from low to high, and reciprocally.
 5. While increasing and decreasing, (this tension) may, for its part, compensate the effects of intensity or weakness of the air current and permit the increase or decrease of the force of sound on each degree of the vocal scale.³⁵

In regard to posterior closure of the glottis, Battaille found that the amount of this occlusion may be variable and he set forth this factor's implications for pitch and register as follows:

1. The glottis may be closed in the rear in all its intercartilaginous portion and in a certain area of its interligamentous portion.
2. This occlusion may gradually increase or decrease.
3. It expands or lessens the area of the vibrating surface and thereby coincides with the production of low or high pitches.
4. By increasing and decreasing, it may, for its part, compensate the effects of strength or weakness of air current and allow the increase or decrease

³³In human vocal production, pitches from low to high are produced by coordination of the cricothyroid, thyroarytenoid, and posterior cricoarytenoid muscles. This action affects the mass, length, and tension of the vocal folds. See Zemlin, 185-188. Battaille's exact meaning concerning ventricular tension and subglottal tension is unclear.

³⁴According to the myoelastic-aerodynamic theory of vocal production, the vocal folds are set into vibration by the air stream from the lungs and the trachea, not by tension in the folds themselves. This theory is well-supported by research. See Zemlin, 213, and William Vennard, *Singing: The Mechanism and the Technic*, rev. ed. (New York: Carl Fischer, Inc., 1967), 56-57, 240.

³⁵Battaille, *Nouvelle recherches*, 95. Translated by the writer.

of intensity of sound on each degree of the vocal scale.

5. The progressive affronting of the arytenoids may sometimes occur to the extent of the inferior third of the internal arytenoid surfaces, which happens in the chest register, and sometimes to the extent of the superior two-thirds of these surfaces, as happens in falsetto register.³⁶

In discussing the third requirement for voice production, current of phonatory air, Battaille clearly set forth his belief that vocal sound is the result of air pressure acting against the vocal ligaments and that pitches are derived by muscular tension which is coordinated with varying amounts of air pressure.³⁷ His findings for this requirement were as follows:

1. The passage of an air current which possesses a desired intensity and which encounters the vocal ligaments which are approximated and tensed causes them to enter into vibration.
2. The increase in intensity of the air current may coincide with the elevation of pitch which is due to the tension of the ligaments.
3. For the same pitch, the increase in intensity of the air current causes a weaker tension of the ligaments and a greater opening of the glottis in the rear.

³⁶Ibid., 90, 98. Translated by the writer. In current research on the falsetto, the vocal folds have been noted to move to a paramedian position from a median position as a result of very high activity of the cricothyroid and posterior cricoarytenoid muscles. The action of the arytenoids in these movements would appear to contradict Battaille's observations. See Zemlin, 194, and Thomas Gay et al., "Electromyography of the Intrinsic Laryngeal Muscles during Phonation," The Annals of Otology, Rhinology, and Laryngology 81 (1972), 406.

³⁷Curiously, Battaille appears to contradict his own theory that the folds are set into vibration by their own tension. (See p. 80.) In regard to the effect of subglottal pressure on pitch-change, only a negligible rise in pitch has been found to occur with laryngeal tension held constant. See Zemlin, 190.

4. Stretched in all directions, the ligaments vibrate in the manner of membranes stretched in like manner.
5. The intensity of the sound and the amplitude of the vibrations are in direct proportion to the intensity of the air current.³⁸

Bataille applied his findings to the singing voice, particularly in regard to his two-register theory, throughout both volumes of De l'enseignement du chant. These applications are treated in more detail in the next section of this project.

Although somewhat inaccurate and incomplete, the amount of anatomy and physiology Bataille was able to observe, conceptualize, and apply to the field of singing is impressive. While his contemporaries investigated the human voice with regard to phonation, registers, and qualities at length, few researchers so closely integrated dissection and laryngoscopic observation with the study of the singing voice.

³⁸ Bataille, Nouvelles recherches, 83, 98-99. Translated by the writer. Current research contradicts the theories contained in points 3 and 5 above. Contrary to point 3 above, it has been proven that vocal intensity may be raised by increasing the air flow with constant vocal-fold resistance, and/or by increasing vocal-fold resistance while maintaining constant air flow. The theory in point 5, while consistent with a theory postulated by Merkel in 1873, has been disproven by recent research findings which show that the duration of closed phase of the vibratory cycle increases with intensity, and the maximum glottal area remains essentially constant. See Zemlin, 198-204.

A Categorical Description of Battaille's Teaching
Attitudes and Approaches in General

Jane Arger has asserted that the vocal teachers who made the greatest contributions to pedagogical theory were those who were both singers and men of scientific background. Specifically, she cited Garcia and Battaille for setting down the most proven rules and for training Europe's finest singers. Arger named Battaille as Garcia's successor and credited him with having "brought the technique to a perfection which we have not seen surpassed."³⁹ Battaille was highly regarded for his own success as a teacher and for the success of those who applied his principles in their teaching. In regard to Battaille's De la physiologie, which contains most of Battaille's teaching method, Arger stated "Battaille was not confined to writing books on science; he leaves us a breviary of style which bears the mark of this great artist."⁴⁰

As a teacher Battaille endeavored to establish a system based on the physiological facts which he had established in Nouvelles recherches. He decried those who taught by imitation and misunderstood traditions and insisted that a system based on physiological fact was more dependable. (De la physiologie, 1-4.) In his writings

³⁹Arger, "Evolution de la technique vocale," 990.
Translated by the writer.

⁴⁰Ibid. Translated by the writer.

he spoke highly of his teacher, but believed that he established his own ground by building on Garcia's work. Battaille was obviously sympathetic to many of Garcia's concepts. His habitual use of the term "voice emission" rather than "voice production" identifies him with Garcia's point of view (see p. 68 and Nouvelles recherches, 84). In his attitudes toward students, however, Battaille was much more protective. While Garcia viewed his responsibility as being limited to guidance and instruction, Battaille felt that voices were "entrusted to his care" (see p. 68 and De la physiologie, 6). He further believed that there were no perfect voices and that all vocal problems could be solved with physiological principles applied by a knowledgeable instructor. (De la physiologie, 6-7.)

Attack

As a result of his own experiments and those of others who preceded him, Battaille regarded the larynx as "a membranous reed of two lips." (Nouvelles recherches, 54-55.) Although Battaille cited no specific persons or research, some physiologists apparently had recently claimed that the length of the windpipe influences the raising or lowering of pitch in the human voice. Battaille joined Müller, Garcia, and others in disputing this view and establishing the responsibility of the larynx alone for pitch adjustments, and the inferior

thyro-arytenoid ligaments or vocal ligaments, acting in coordination with air pressure, for phonation.

(Nouvelles recherches, 55.)

Battaille based his theory of phonation on his laryngoscopic observations. In the course of his experiments, he observed that proper attack or phonation depends upon loose occlusion of the glottis coordinated precisely with breath effort. He observed that it is impossible to produce a vocal sound with the glottis entirely open, whatever amount of expiratory air force is involved. However, as the vocal ligaments are brought closer together until placed in vibration by the air current, a "muffled and hollow" sound results. (Nouvelles recherches, 31.) Such sounds, resulting in Battaille's experiments from slight approximation of the vocal folds and an entirely open intercartilaginous glottis, were noted as well by Garcia in the first edition of the Traité, Part II, and his "Observations" (see pp. 53-54). As the approximation between the arytenoid cartilages became closer and the closed phase of vocal-fold vibration became more complete and efficient, the vocal sound was noted to increase in clarity or éclat.⁴¹ (Nouvelles recherches, 32.) In concurrence

⁴¹Since incomplete closure of the glottis results in breathy production, Battaille was apparently experimenting with sustained-tone production in progressive degrees of glottal closure. See Zemlin, 207.

with Garcia, Battaille therefore noted that approximation of the arytenoids resulting in efficient glottal closure is indispensable for acceptable vocal production. (Nouvelles recherches, 36.)

Up to this point, Battaille's observations corresponded closely to Garcia's. In like manner, his insistence upon a moderately lowered larynx and a free lower jaw during phonation were comparable to Garcia's principles. (A full discussion of these concepts is found in the section on voice qualities. See pp. 105-107). Battaille's method of attaining this goal was dramatically different from that of his teacher, however:

The attack of the sound must take place without force, in order that the muscles not be overworked by a series of violent contractions and the vocal membrane bruised by an exaggerated explosion of air current which places it in vibration. (De la physiologie, 17. Translated by the writer.)

Due to his observations of the difficulty with which the larynx executes "violent and curt attacks," Battaille denounced the coup de glotte and "replaced" it with a concept of his own. (De la physiologie, 18.) Named the "method of compensation," its basis lay in the principle that the vocal ligaments never be jarred by violent action, but be kept in a state of moderate tension while air current is proportionately and moderately increased for each decrease in tension of the ligaments.

. . . all the fullness and sonority desired can be obtained from the voice with a moderate tension of the

vocal ligaments, provided the intensity of the air current is increased. (De la physiologie, 45. Translated by the writer.)

The goal of this procedure was to enable the singer to execute the entirety of his vocal scale with the minimal degree of ligamentous tension necessary for clear tone and facile pitch adjustment. Battaille believed that this was accomplished by compensating the lack of tension with a proportionate increase in expiratory air current. In addition, he required that the larynx be moderately lowered and the lower jaw be very loose.⁴² (De la physiologie, 47-48.)

Registration

In contrast to Garcia, who maintained that most voice classifications have three registers, Battaille insisted upon two, chest and falsetto. Various adjustments of the thyro-arytenoid muscles were found to be responsible for the most effective role in production of both registers. (Nouvelles recherches, 14.) In his explanatory table of anatomical terms in De la physiologie, Battaille placed the following definitions:

chest voice: Vocal sound produced by the total area of the vocal ligaments.

⁴²Since coordination between glottal movements and breath are the basis of this concept, it is treated more fully in the section on coordination, pp. 110-114.)

falsetto: Vocal sound produced by the superior two-thirds of the vocal ligaments.⁴³
 (De la physiologie, xviii. Translated by the writer)

Bataille apparently applied the term "falsetto" to the same area of the vocal range which Garcia divided into falsetto and head. Bataille regretted the use of the terms "head" and "falsetto," but continued them because of their familiarity to the reader. He felt, however, that he was the first to derive the proper origin of the term "falsetto." He traced it to the Latin word fauces, which means the upper part of the throat, rather than to the Italian falso, which means false. (De la physiologie, 6.) While there are differences between various voice classifications in register ranges and passagio areas, Bataille found both chest and falsetto registers legitimately to exist in all classifications.

In order to observe the larynx in production of the chest voice, Bataille began his observations with sustained low notes produced by a relatively open glottis. He then observed the changes that occur in sound and physiological appearance as the glottis, including

⁴³Bataille's exact meaning is unclear: "Voix de faucet: Son vocal produit par les deux tiers supérieurs des ligaments vocaux." Stockhausen, who was closely acquainted with Bataille's research and teaching, observed, "I quite agree with Ch. Bataille, who proves that for the chest-voice the whole width of the vocal cords is required, for the falsetto only two-thirds." See Julius Stockhausen, A Method of Singing, trans. Sophie Lowe (London: Novello, Ewer, and Co., 1884), 11.

the arytenoid cartilages, is progressively closed. With this production, characterized by vibrations throughout the glottal area, Battaille observed the larynx in singing from low to high and also from high to low. (Nouvelles recherches, 31-35.) For the sake of analysis and comparison, he divided the vibratory area of the larynx, that is, the vocal folds or internal thyro-arytenoids, into three regions:

1. A sub-glottal region, which runs just beneath the glottal area in a line from the thyroid angle to a point just below the anterior border of the arytenoids
2. A ventricular region, comprising the region just above the glottis and below the false vocal folds
3. A free border, running from the thyroid angle to the vocal processes, formed by the lips of the glottis

His observations are listed under eleven points:

1. The vocal folds vibrate in all their area
2. The vibrations become more rapid and larger as the pitch is raised
3. In singing from low notes to higher notes, the glottis is narrowed from back to front up to the following notes:



4. In ascending the scale, the vocal ligaments are raised and gradually stretched in all three regions
5. In singing above the limits indicated above in chest voice, the principal agent for the elevation of vocal pitch appears to be the vocal ligaments
6. In continuing up the scale, the arytenoids cause the glottal opening in the rear to be reduced and simultaneously cause the area of the vibrating surface to become smaller
7. A certain number of lower pitches may be produced in chest voice with a relatively open glottis, but these sounds lack clarity
8. The glottis remains rectilinear and the arytenoids are approximated by the lower third of their internal surfaces
9. The superior thyroarytenoid ligaments take no part in sound generation⁴⁴
10. The ventricles of Morgagni remain linear
11. In ascending the scale, the vestibule of the glottis is contracted in all directions. Its walls are straightened and become less concave and its depth

⁴⁴ Battaille's exact meaning is unclear. "Superior thyroarytenoid ligament" apparently refers to some intrinsic laryngeal part currently described by another term.

lessens slightly in voix sombre and more so in voix claire (Nouvelles recherches, 36-37.)

For study of the falsetto, Battaille observed glottal movements while singing the same note alternately in chest and falsetto and while ascending the scale in falsetto. His observations of the changes which took place led him to establish the following physiological characteristics of the falsetto register:

1. The vocal folds vibrate in only two of their three regions, the free border and ventricular regions, while the sub-glottal region remains still
2. The vibrations become smaller and more rapid as the pitch ascends
3. The glottis takes on a generally elliptical form (see Figure 4)
4. In ascending the scale, the glottis is narrowed up to the following notes:



(Battaille gave no explanation of the unusually high pitches for basses. It is possible that he was including baritones in this classification.)

5. In ascending the scale, the vocal folds are gradually stretched in their free border and ventricular region.

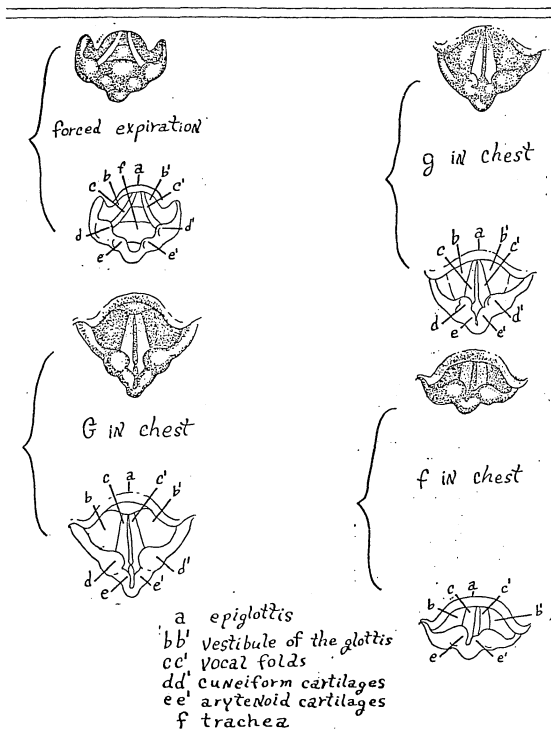
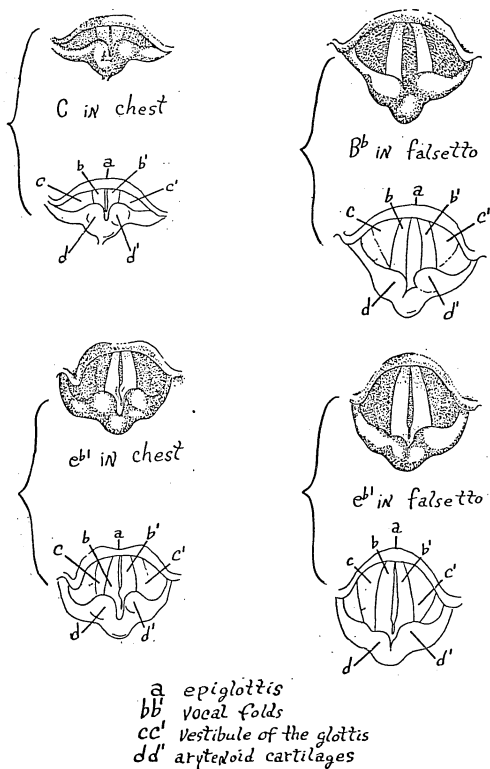


FIGURE 4: BATTAILLE'S DRAWINGS OF THE GLOTTIS DURING CHEST AND FALSETTO PRODUCTION. From Battaille, *Nouvelles recherches*, plates VI and VII.

FIGURE 4 - Continued.

Anterior-posterior tension increases in this movement, but not as much as in the chest register

6. As in the chest register, the principal agent for pitch elevation above the aforementioned limits appears to be the vocal folds
7. Up to the indicated limits, the arytenoids diminish the posterior area of the vibrating surface while the glottal opening is also diminished
8. The superior thyroarytenoid ligaments take no part in the generation of sound
9. In ascending the scale, the vestibule of the glottis is contracted in all directions. Its walls are straightened and become less concave and its depth lessens slightly in voix sombre and more so in voix claire. The mucous membrane is raised and stretched.
10. The lower pitches of falsetto occur with an open glottis, but cannot acquire clarity until the cartilages are approximated⁴⁵ (Nouvelles recherches, 45-47.)

In current research concerning registration, Ralph Appelman has published findings from experiments which corroborate and add to Battaille's findings on the vestibule. In

⁴⁵Current research has found that the vocal folds move to a paramedian position in high falsetto, often with evidence of breathiness in the tone. See Zemlin, 195.

working with several vowel qualities, Appelman was able to verify increases and decreases in ventricular dimensions as well.⁴⁶

Characteristics which Battaille found to be peculiar to the chest register were:

1. The rectilinear form of the glottal opening
2. Approximation of the arytenoids by the inferior third of their internal surfaces
3. Some vibration in the sub-glottal region of the vocal folds

The characteristics found only in the falsetto register were:

1. An elliptical glottal opening⁴⁷
2. Approximation of the arytenoids by the superior two-thirds of their internal surfaces
3. The absence of vibration in the sub-glottal region
(Nouvelles recherches, 48.)

Battaille also noted that a more powerful air current is necessary for chest voice. A weaker current results in

⁴⁶Ralph Appelman, "Radiological Findings in the Study of Vocal Registers," in Vocal Registers in Singing: Proceedings of a Symposium, ed. John W. Large (Paris: Mouton, 1973), 59-92.

⁴⁷The elliptical glottis has been found to be associated with the low and middle falsetto. See Zemlin, 195.

falsetto.⁴⁸ (Nouvelles recherches, 32.) He later described in detail the specific muscular movements which he found were responsible for chest and falsetto production. (Nouvelles recherches, 82-83.)

In terms of current research, Battaille's descriptions of the physiological production and shape of the glottal opening for falsetto appear to correspond with the lighter production of medium and head registers as described by Vennard.⁴⁹ Rubin, working from a general definition of falsetto as "that portion of the voice which encompasses the upper singing range,"⁵⁰ found two types of falsetto, one which employed "damping" (see p. 40) and one which did not. Rubin's photographs of the falsetto, produced without damping, reveal glottal shapes which appear to correspond to Battaille's drawings⁵¹ (see Figure 4).

While he recognized two registers instead of Garcia's three-register concept, Battaille's approaches to

⁴⁸Current aerodynamic research contradicts Battaille's findings. Increase in rate of air flow has been found to be a significant factor for higher pitches in lighter registration, including falsetto. See M. Hirano, W. Vennard, and J. Ohala, "Regulation of Register, Pitch and Intensity of Voice," Folia phoniatrica 22 (1970), 13-17.

⁴⁹Vennard, Singing, 67-73.

⁵⁰Henry J. Rubin and Charles Hirt, "The Falsetto: A High Speed Cinematographic Study," The Laryngoscope 70 (1960), 1306.

⁵¹Ibid., 1305-1324.

uniting the registers were very much the same as those of his teacher. His attitudes in general remained relatively conservative. Battaille insisted upon starting all voices by developing the middle voice first. With thorough exercise in this area, the least amount of effort would result in the most efficient production.

Battaille recognized the need for development of muscular control within the larynx for the correction of faulty tone, technique, and pitch. He believed that his physiological findings supported the emphasis given vocal exercises by the bel canto teachers, and therefore insisted on thorough but graduated exercises for his students:

But if the sureness, the precision, and the power of sound absolutely depend on the direction and the precision of the laryngeal muscles, it is evident that, above all, we must be occupied with the training of these muscles to make them supple and accustom them to orderly, fixed movements entirely dependent on the will, and finally to compel them to perform true vocal gymnastics. Such was the method taught by the old Italian school; such is that which I use and which I affirm, in the name of good sense, to be the only acceptable way. (De la physiologie, 13-14. Translated by the writer.)

While De la physiologie included only a few basic exercises, the contexts of their descriptions tell us that the exercises Battaille used were carefully graduated according to difficulty, although probably not as much as were Garcia's. (De la physiology, 61-64.)

Two factors involved in developing ease and freedom were a moderately lowered larynx and a loose lower jaw. Battaille felt that a moderately lowered larynx "results

in giving the voice suppleness and power, and encourages the enlargement of its natural range." (De la physiologie, 15.) Freedom of the lower jaw guarantees that the extrinsic laryngeal muscles would not be used in the rapid execution of vocal passages. As proof of this factor, Battaille offered his success in teaching the trill by emphasizing a relaxed lower jaw. He suggested Garcia's employment of a ribbon tied to hold the jaw in place, but much preferred to "appeal to the student's intelligence." (De la physiologie, 16.) His suggested exercises for the trill were as follows: (De la physiologie, 64.)

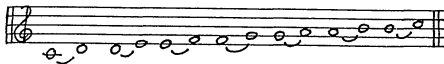


An exercise basic to Battaille's method for blending the registers was the port de voix, or portamento, which allowed all pitches between intervals to be heard as a part of the single execution of a glide. Because it imparted a regularly graduated tension to the vocal ligaments, the port de voix was found to be an excellent exercise for blending all areas of the voice and for the execution of difficult intervals.

I have made the port de voix the foundation of exercises to which I submit all beginners, in order that they learn to pass through all intervals with surety. To sing slowly all notes of the scale

and to carry the voice with energy from one note to the other without dragging it is the best of exercises. (De la physiologie, 19. Translated by the writer.)

The following example of the port de voix was intended to be transposed to any keys necessary for various voice classifications: (De la physiologie, 64.)

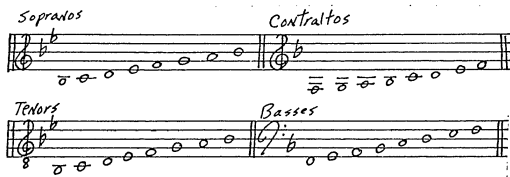


It may be assumed that the other intervals of the diatonic scale were practiced in like manner.

For all voice classifications, Battaille insisted upon limiting the chest register and avoided extending the chest beyond its means. Since he found that the development of the chest register depended directly upon the size of the larynx, he denounced its false extension. With women's voices, Battaille usually limited the upper chest register to f^1 and began the falsetto with g^1 . (De la physiologie, 23.) These limitations are comparable to those established by Garcia (see Figure 1). No further specifications of register limits were provided by Battaille. However, he noted that, as the scale is ascended in falsetto, the register progressively develops more brilliance (éclat). He urged that students diligently practice the passage from chest register to falsetto at the pitch levels where "the muscular tension is moderated and the falsetto register already has enough ring for it to be advantageously employed." These pitches he defined

as being f^3 to g^3 for women and tenors and e^3 to f^3 for baritones. (De la physiologie, 21.) While Battaille did not specify the lower falsetto limits, use of the falsetto on lower pitches was a part of his own experimentation (as seen in Figure 4), if not a part of his program for vocal training.

For development of the chest, Battaille based two very simple exercises upon his research. Using the glottis relatively open, he had students sing a scale on sustained notes with one breath per note:



The next step was to connect every two notes before breathing. For maximum comprehension of the chest register the glottis was to remain as open as possible:



No mention of further progression of these exercises was made. (De la physiologie, 63.) There is an obvious

contradiction between the upper limit which Battaille allowed sopranos for the chest register and the range required for this exercise. He may possibly have intended the exercise to be adjusted or shortened in accordance with his soprano chest limits.

Another physiological phenomenon also influenced Battaille's conservative principles. He noted that voices with well-developed upper notes usually possess numerous muscular fibers of unequal length located between the free border and the arytenoid apophyses. If the function of these fibers is compromised by their scarcity or absence, no amount of vocal exercise can enable a voice to attain upper notes.⁵² (Nouvelles recherches, 66.) Battaille felt that wise exercise would enable a voice to acquire the maximum ranges allowed by the physiology of an individual larynx. He denounced those teachers of his day who boasted of extending ranges by great margins and of changing baritones to tenors. (De la physiologie, 24-25.) Battaille's ranges for the four major voice classifications were listed in De la physiologie as they appear in Figure 5. He neglected to include specific ranges for intermediate classifications, such as mezzo-soprano and baritone, because he had intended to discuss these voices in detail in his fourth volume. (De la physiologie, 62.)

⁵² No current reference or research could be found to support Battaille's "fibers of unequal length."

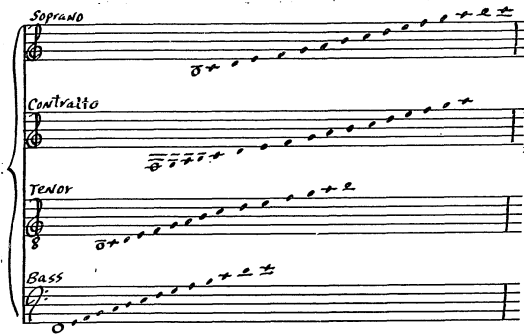
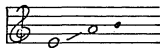


FIGURE 5: BATAILLE'S RANGES FOR THE FOUR MAJOR VOICE CLASSIFICATIONS. From *De la physiologie*, 62, transposed from the original clefs.

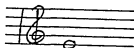
In regard to the falsetto, Battaille, like Garcia, found the untrained lower falsetto to be weaker, and therefore endeavored first to develop the falsetto at the bottom of its scale. In so doing, he learned that he simultaneously was strengthening it for its upper notes as well. (*Dela physiologie*, 26, 29.) With women, Battaille believed that union of the registers was of first importance. He felt that the voice teacher had the obligation to "place"

the lower, weaker notes of the woman's falsetto where they would be heard least often and then to develop their strength to match the remainder of the voice:

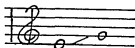
(De la physiologie, 23-24.)



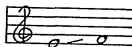
with new women students particularly, including beginners and those who had been allowed to carry the chest register too high, Battaille began by limiting the chest voice to:



He taught the student to master the third:



in falsetto. Then, while the student continued practicing the second in falsetto:



Bataille had her practice the same notes in chest register. In the more difficult cases of chest abuse, Battaille extended the study of falsetto as far as



before following the above procedure. He was most enthusiastic about the results of this approach:

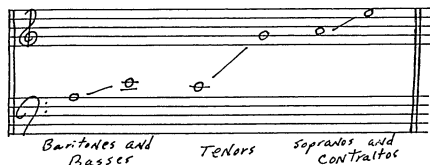
I often am able to return to the organ, if not the lost freshness and power, at least a sufficient homogeneity and solidity for facilitating a complete (vocal) education. (De la physiologie, 27. Translated by the writer.)

Bataille was also enthusiastic about another exercise for unification which was used by Garcia as well. Using a single expiration, the student was required to repeat the same note alternately in falsetto and chest. The progression of intervallic relationships in this exercise was comparable to Garcia's approach: (De la physiologie, 64.)



The process of blending the registers is most critical in the passaggio areas of the voice. Based upon his physiological observations of changes in muscular

employment as the scale is ascended, Battaille found these areas to be defined as follows: (De la physiologie, 50.)



While all of the foregoing procedures were applicable here also, Battaille found that the approach which was peculiarly his own, the "method of compensation," was most effective for the passaggio. (De la physiologie, 50. A full description of the "method of compensation" is contained in pp. 110-114.)

Vowels and Voice Qualities

Battaille's teaching principles in the area of vowels were not set down in either of his published volumes. It is possible that he had intended to treat this area as a part of style (as did Garcia) in his fifth volume, Du style et de l'esthétique dans le chant. No suggested vowels were given for his vocal exercises, nor was there any mention of physiological attributes of vowel formation or of vowel modification.

In the area of voice qualities, Battaille accepted the existence and usefulness of voix claire and voix sombre, but gave no suggestions for their stylistic use. In his treatment of registration (see pp. 87-105), Battaille contrasted the different physiological productions of these two qualities and their effect upon the vestibule of the glottis. In ascending the scale in chest voice, Battaille noted that the depth of the vestibule lessens more for voix claire than for voix sombre. The same was found to be true of the falsetto. (Nouvelles recherches, 37,47.) Garcia's more detailed analysis of physiological conformations for these qualities was in agreement (see pp. 55-56).

In regard to the voix sombre exclusively, however, Battaille took a stronger position. He had noted that pitch adjustment is largely the responsibility of the cricothyroid muscle. A high laryngeal position was found to cause the windpipe to be distended and to increase the distance between the cricoid and thyroid cartilages and as a result, the separation between the points of attachment of the cricothyroid muscle. He found it necessary, therefore, to insist upon a moderately lowered position of the larynx. In this way the cricothyroid muscle can function with less effort, can have a larger field of contraction, and thereby can permit the voice a wider range. Battaille identified the result as the voix sombre of Garcia, Diday, and Pétriquin, but did not describe or

endorse other voice qualities as being correct or acceptable. (De la physiologie, 14-15.) Battaille credited Garcia with making the most important contribution to research on this matter and added his own conclusions:

In sum, when the vestibule of the glottis is narrow, the sound is more shrill and more thin; when this same vestibule is flexible and large, the sound is rounder, larger, and more mellow. Finally, there is a complete interdependence among the vestibule, the larynx itself, and the pharynx; when the latter two are spacious and elastic, the vestibule shares their state of relaxation and is favorable for fullness of sound. This remains the most convincing argument for relaxation of parts neighboring the glottis during voice production. (De la physiologie, 43-44. Translated by the writer.)

Recent research on trained and untrained voices has shown that most trained voices use a lower larynx position in singing than untrained voices. The description of the results of these experiments is similar to Battaille's description:

Singers . . . tend to maintain larynx position near or well below the physiologic resting level as voice frequency is raised suggesting that they utilize the horizontal pulling forces provided by cricothyroid muscle contraction almost exclusively for increasing frequency. By not raising the larynx substantially above rest position, singers do not shorten the vocal tract, and the supraglottal structures (ventricle, pyriform sinus, hypopharynx) remain the same size or enlarge as the fundamental frequency is increased.⁵³

⁵³Thomas Shipp and Krzysztof Izdebski, "Vocal Frequency and Vertical Larynx Positioning of Singers and Non-singers," Journal of the Acoustical Society of America 58, 5 (November, 1975), 1106.

Breathing

Although he felt that a complete study of respiration for singers was outside his purpose (Nouvelles recherches, 98), Battaille performed an unprecedented observational study on this subject. He first designated three types of breathing: (1) superior rib, or clavicular, in which the movements of respiration are very apparent in the regions of the upper ribs and clavicle, (2) inferior rib, in which the actions are localized with the lower six or seven ribs, and (3) abdominal or diaphragmatic-costal, which consists of a small amount of lower rib movement and a larger amount of abdominal swelling and receding. (De la physiologie, 35.) These designations and descriptions are comparable with current terminology. Battaille then used the laryngoscope to observe that each type of breathing affects the glottis in a different way. With superior rib inhalation, he noted that the glottis is able to maintain a narrow opening only with difficulty. In addition, a wheezing sound accompanies the intake of air as does a sensation which provokes coughing. With lower rib inhalation the glottal opening is larger, and the other characteristics are minimized. Diaphragmatic-costal inhalation results in a fully open glottis and absence of the wheezing and other sensations. (De la physiologie, 36.) In Nouvelles recherches Battaille noted that all glottal action for phonation takes place

with ease if diaphragmatic breathing is employed and with effort if the other types, particularly superior rib breathing, are employed. (Nouvelles recherches, 29.)

Because diaphragmatic-costal breathing results in a greater volume of air gained in a shorter period of time with much greater control over exhalation, Battaille insisted upon its early mastery. He listed three results of diaphragmatic-costal breathing: (1) it considerably lessens vocal fatigue, (2) it has a direct effect on tone quality, resulting in "a roundness, homogeneity, and an exceptional suppleness," and (3) it aids in the restoration of voices harmed by abuse of various types. (De la physiologie, 41.)

Battaille used a fairly simple procedure for teaching breathing to a beginning student. Using short breaths, he first taught the student to breathe entirely with abdominal expansion only. He had the student progressively increase the involvement of the lower ribs as well until inhalations could be taken with complete involvement of the lower thorax.

. . . If it is remembered that the act of singing requires considerable development of respiratory movements, it is evident that it would be illogical to limit these movements to a single portion of the thorax, and that it is necessary to involve the entire chest, reserving the most extensive action for its largest and most mobile part, its base. Parenthetically, it is very clearly seen in this circumstance how physiological laws can become infallible guides in the matter of art. (De la physiologie, 40-41. Translated by the writer.)

Coordination

It is evident that Battaille believed his most singular contribution to the field of vocal pedagogy to be his approach in coordinating breath with phonation, as derived from his physiological observations. He named this approach the "method of compensation." From his detailed studies in Nouvelles recherches, Battaille drew four physiological laws which became the basis of this method:

1. In the vocal folds, the amplitude of vibration is in direct proportion to the intensity of the air current and to the area of the vibrating surface
2. The longitudinal tension of the vocal folds is in inverse proportion to the intensity of the air current for each sound
3. The intensity of the air current is in inverse proportion to the degree of posterior glottal occlusion for each sound
4. The intensity of the sound is in direct proportion to the amplitude of vibrations and to the intensity of the air current⁵⁴ (De la physiologie, 45. Translated by the writer.)

His reduction of these laws was as follows:

Translated into practical language, these axioms mean that all the fullness and sonority desired can be obtained from the voice with a moderate tension of the vocal ligaments, provided the intensity of

⁵⁴ While some concurrence with points 1 and 4 can be found in research conducted between 1940-1942, the most recent research has proven that, while an increase in air flow is accompanied by greater loudness, vocal intensity has not been found to be a function of air flow alone. In addition, current research shows that, during an increase in intensity, the maximum glottal area remains constant, rather than increases proportionately. See Zemlin, 199-200.

the air current is increased. (De la physiologie, 45. Translated by the writer.)

Battaille's experiments of 1860 gave him the background for this concept. While using the laryngoscope, he found that he was able to produce some of his lower notes without the glottal lips in total contact. By increasing the air current and approximating the arytenoid cartilages more firmly, he was able to produce the same notes with more clarity while using less tension in the vocal ligaments. (Nouvelles recherches, 31-35.) The theory which he formulated on the basis of this observation was as follows:

Proportionately replace tension in the vocal ligaments with energy of air current and increase to the greatest degree the glottal opening which is most compatible with each sound. (De la physiologie, 47. Translated by the writer.)

The result of this method is a release of excess tension in the vocal ligaments. Battaille's accompanying emphasis upon the moderately lowered larynx gives the cricothyroid muscles the responsibility for making all pitch adjustments. Vennard noted this factor to be a basic one for the achievement of freedom and coordination in singing.⁵⁵ The aforementioned experiments of Shipp and Izdebski verified that trained singers usually use a lowered laryngeal position and therefore make all pitch adjustments with the cricothyroid muscles. (See p. 107.)

⁵⁵Vennard, Singing, pp. 60-61.

Battaille found two notable physiological results of this method: (1) the area of the vibrating surface was increased, and, consequently, the fullness and sonority of the voice were improved as well, and (2) a great deal of the labor was taken over by the expiratory muscles acting as a result of diaphragmatic-costal breathing. (De la physiologie, 48.)

To teach the method of compensation, Battaille returned to the experimental procedure he was following when he discovered the method. While taking care that the student was using diaphragmatic-costal breathing, that the lower jaw was loose, and that the extrinsic laryngeal muscles were not involved, Battaille had the student produce the lowest notes in his voice with the glottis as open as possible. If the resulting sound was "muffled and hollow," he worked for more clarity which resulted from closing the posterior part of the glottis while maintaining the freedom of the extrinsic muscles and the lower jaw. At first, most students were able to produce only a few lower notes with this method. Very soon, however, they were able to sing through their range with much less tension in the vocal ligaments than before. As a result, more muscular facility was made available and one or two notes were added to the top range. This procedure also resulted in an ease of muscular action important to vocal agility, power, and

efficiency. Battaille found that it was also extremely important for mastering the passaggio areas of the voice where homogeneity is most difficult to achieve. He found this difficulty to be so pronounced in some female voices that tone quality was entirely different, leading some observers to recognize two falsetto registers, the "falsetto proper" and the "falsetto-head." Battaille believed this difficulty to be due to an excess of muscular contraction and found the method of compensation to be an indispensable part of its correction. (De la physiologie, 49-51.)

Battaille apparently worked toward a procedure of moderating tension within the larynx in proportion to increased breath pressure from low notes to higher notes until the entire vocal range was produced in this manner. In so doing, he found that a compensation or balance was established between the actions of the breath and the glottis. (De la physiologie, 51.) Such a balance was important to Garcia also, but it was not as fundamental to his method as it was to Battaille's. (See pp. 63-64.) While Battaille recognized some necessary differences of approach with individual students, his teaching method for all students was based upon five basic points: (1) diaphragmatic-costal breathing, (2) the loose jaw, (3) the moderately lowered larynx, (4) non-involvement of the extrinsic muscles of the larynx, and (5) the method of compensation. While his research, like Garcia's,

justified most traditional teaching emphases, Battaille's most unique contribution to the field of vocal pedagogy may have been his emphasis on the method of compensation. Although its physiological basis was somewhat inaccurate, this approach to freedom and coordination of the vocal mechanism apparently became a successful and fundamental basis for Battaille's teaching.

IV. THE TEACHING PRINCIPLES OF MARCHESI

Biographical Material

In the 1870's Manuel Garcia was teaching in England and Mathilde Marchesi and Julius Stockhausen were approaching the height of their teaching careers in France and Germany, respectively. According to Mackinlay, Marchesi and Stockhausen were regarded to be the foremost teachers of their time in their respective countries.

It is therefore a matter of some note that during the years in which Manuel Garcia was himself the finest teacher in England, he should, through these two pupils, have had his banner thus upheld upon the continent.¹

Although Arger regarded Battaille more highly than Marchesi as a leading teacher,² the indication remains that Manuel Garcia was exerting an impressive amount of influence on nineteenth-century vocal teaching.

Marchesi was born Mathilde Graumann in Frankfurt-am-Main in 1821, the daughter of a wealthy merchant. According to one source, she began her voice study with

¹Mackinlay, Garcia, the Centenarian, 195.

²See p.83 and Arger, "Evolution de la technique vocale," 990.

Felice Ronconi (1811-1875) in the city of her birth.³ When the family fortunes failed in 1843, she went to Vienna for study with Otto Nicolai (1810-1849). She moved to Paris to begin study with Garcia in 1845.⁴ During the next two years she apparently developed a noticeable aptitude for teaching as well as singing and Garcia began to entrust her with some of his beginning students. In the spring of 1847, Garcia suffered a broken arm in a fall from a horse and Marchesi took over the teaching of most of his pupils. However, he continued to offer her counsel when needed.⁵

No descriptions of Marchesi's voice have been found other than that it was a mezzo-soprano. Her singing was apparently highly regarded. After four years of study, she followed Garcia to London where she became widely known as a concert singer.⁶ Between 1849-1852 she sang successfully in Britain, Germany, Belgium, Holland, Switzerland, and France.⁷ In 1852 she married the baritone Salvatore Marchesi and together they sang opera

³Enciclopedia della musica, 1964 ed., s.v. "Marchesi, Mathilde Graumann."

⁴Grove's Dictionary of Music and Musicians, 5th ed., s.v. "Marchesi, Mathilde Graumann." By Bertha Thomas and Alexis Chitty.

⁵Mackinlay, Garcia, the Centenarian, 162.

⁶Ibid., 162.

⁷Thomas and Chitty, "Marchesi, Mathilde Graumann."

on the continent until 1854, when she accepted a teaching post at the Vienna Conservatory.⁸ According to Marchesi's own account, she sang several concerts with her husband at the beginning of their stay in Vienna and then retired from the performance world to devote all of her faculties to teaching. The one exception was an occasion in January, 1856, when she replaced another singer on short notice as Donna Elvira in the finale of Mozart's Don Giovanni. The occasion was a Mozart centennial performance conducted by Franz Lizst.⁹

During the next six years Marchesi's contributions to the development of the Vienna Conservatory's vocal department established her reputation as a teacher. In 1861 she moved with her husband to Paris where she attracted many pupils. She accepted a teaching post at the Cologne Conservatory in 1865 and in 1868 resumed her position at the Vienna Conservatory. She resigned this position in 1878 but remained in Vienna and taught privately. In 1881 she returned to Paris, where young singers continued to come to her for instruction. She died in London in 1913.¹⁰ Her reminiscences, first published as Aus

⁸Baker's Biographical Dictionary of Musicians, 5th ed., s.v. "Marchesi, Mathilde Graumann."

⁹Mathilde Marchesi, Marchesi and Music: Passages from the Life of a Famous Singing Teacher (New York: Harper and Brothers, 1897), 93-94.

¹⁰Thomas and Citty, "Marchesi, Mathilde Graumann."

meinen Leben,¹¹ were published in English as Marchesi and Music in 1897 (see n. 9). She left many volumes of vocal exercises and vocalises, some of which continue to be published. Her greatest legacy, however, may have been the large number of singers who emerged from her studio to become outstanding performers: Emma Calvé (1858-1942), Emma Eames (1865-1952), Etelka Gerster (1855-1920), Nellie Melba (1861-1931), Ilma di Murska (1836-1889), Sibyl Sanderson (1865-1903), and her daughter Blanche Marchesi (1863-1940).¹² Harold Rosenthal listed other Marchesi students who performed with distinction at Covent Garden: Emma Abbott (1850-1891), Francis Saviile (1862-1935), Suzanne Adams (1872-1953), Ellen Gulbranson (1863-1946), and Selma Kurz (1877-1933).¹³

Marchesi's Publications

Unlike both Garcia and Battaille, Mathilde Marchesi had little scientific background and attempted no research on the singing voice. While she apparently respected the contributions of vocal science, she devoted

¹¹Mathilde Marchesi, Aus meinem Leben (Düsseldorf: F. Bagel, 1888).

¹²International Cyclopedia of Music and Musicians, 10th ed., s.v. "Marchesi, Mathilde Graumann."

¹³Harold Rosenthal, Two Centuries of Opera at Coven Garden (London: Putnam, 1957). See separate entries for the personalities mentioned.

herself to establishing a system of teaching suited to her own methods of approach. Her publications, therefore, were devoted more to instruction and involvement in vocal art than to writings about the mechanism of vocal production.

The uniqueness of Marchesi's publications lies in the large number of vocalises which she published for various types of female voices, each designed to accomplish a specific purpose. According to her own account, her vocalizzi were born of personal experience. Garcia never gave extended vocalises to his pupils. He preferred methodical exercises which were often uninteresting. In Marchesi's case, she was required to practice these with the metronome.¹⁴ On the other hand, Garcia's colleague, Giovanni Marco Bordogni (1789-1856), imposed extremely difficult exercises on his students, often before they were ready for them.

It was there that I conceived the idea of composing vocalizzi, each of which should contain an exercise, on the scale, on arpeggios, the mordente, the trill, etc., and all in melodic form. These were intended to carry further the study of exercises. I believe my idea to have been correct, for to proceed directly from the scale to the singing of an air impressed me, while I was but a student myself, as a too great step.¹⁵

¹⁴ Mackinlay, Garcia, the Centenarian, 161.

¹⁵ Mathilde Marchesi, "Singing Lessons," Harper's Bazaar 33 (October 27, 1900), 1620.

Marchesi's meanings of the terms "exercise" and "vocalise" is important, because the two terms are rarely defined differently in vocal writing. She apparently regarded exercises as basic introductory units designed for a specific purpose. As such they had little musical interest. Her vocalizzi, however, embodied the same musical figures but were set within a larger, more developed musical scheme. They were not provided with texts, but were designed to be sung on a chosen vowel. In Part I of Marchesi's Op. 31, her exercises were intended to be mastered before their companion vocalises in Part II were attempted.¹⁶ Several portamento exercises and one of their companion vocalises from Op. 31 are provided for comparison in Figures 6 and 7. Another term, "etude," was applied to longer vocal pieces which were more musically developed than either the exercise or the vocalise. All of Marchesi's etudes in her Opus 36 were in ABA' form and were graduated according to vocal and musical difficulty.¹⁷

It is uncertain when Marchesi began publishing her vocal studies. Most of those listed in the National Union Catalog of American library holdings contain only

¹⁶ Mathilde Marchesi, Theoretical and Practical Vocal Method, Op. 31 (London: Enoch and Sons, Ltd., n.d.; reprint ed., New York: Dover Publications, Inc., 1970).

¹⁷ Mathilde Marchesi, Dix-huit nouvelles études de style, moyenne difficulté, pour soprano ou mezzo-soprano, Op. 36 (New York: G. Schirmer, 1902).

PORTAMENTO.

The musical score is titled "PORTAMENTO." and is for piano. It consists of five systems of music, each with a grand staff (treble and bass clef). The first system is labeled "PIANO" on the left. The music is in 3/4 time and features a variety of melodic and harmonic exercises, including slurs, ties, and dynamic markings like "p" and "f".

FIGURE 6: MARCHESI: PORTAMENTO EXERCISES. From Mathilde Marchesi, *Theoretical and Practical Vocal Method*, Op. 31 (London: Enoch and Sons, Ltd., n.c.: reprint ed., New York: Dover Publications, Inc., 1970), 5. Used by permission of Dover Publications, Inc., 180 Varick Street, New York, 10014.

VOICE *Moderato.*

PIANO *Moderato.* *p*

rall. *a tempo.* *rall.*

rall. *a tempo.* *colla parte.*

FIGURE 7: MARCHESI: PORTAMENTO VOCALISE. From Marchesi, *Theoretical and Practical Vocal Method*, 47. Used by permission.

approximate dates and it is almost certain that these libraries do not, in most cases, possess first editions.¹⁸ However, their titles provide insight into Marchesi's intentions. Descriptions of the earliest publication of each opus listed in the National Union Catalog are provided below. In some cases, the only description available for some numbers is Marchesi's own listing in her "Singing Lessons" (see n. 15). In such cases, the descriptions are provided but are not treated as titles.

Opus 1

Exercices élémentaires gradués pour le développement de la voix, op. 1. New York: E. Schuberth and Co., [187?].

Five other German and English editions are also listed. One later edition has instructions in English, French, and German.

Opus 2

Vingt-quatre vocalises pour soprano ou mezzo-soprano avec accompagnement due piano, op. 2. Berlin: Ries and Erler, n.d.

Since publishers of all the other editions listed are American, it is assumed that this edition is the earliest. The other editions carry dates of [187?] to 1888. This opus was designated as an introductory set to Op. 6, with the intention that it be mastered before Op. 6 was attempted.¹⁹

Opus 3

Vingt-quatre vocalises pour soprano. op. 3. Cologne: Schloss, [188?].²⁰

¹⁸ The National Union Catalog: Pre-1956 Imprints, 559 vols. (London: Mansell, 1974), 371: 50-53.

¹⁹ Op. 2 is currently published as Twenty-Four Vocalises for Soprano or Mezzo-Soprano, ed. J. H. Cornell (New York: G. Schirmer, 1884).

²⁰ Op. 3 is currently published as Twenty-Four Vocalises for Soprano (New York: Belwin-Mills, n.d.).

Opus 4

Twelve studies of style for soprano.

Opus 5

L'Art du chant: 24 vocalises élémentaire et progressives
pour mezzo-soprano ou contralto, op. 5. Leipzig:
B. Senfl, 1870 .

Opus 6

L'Art du chant: 24 vocalises perfectionnement du mécanisme
de la voix pour mezzo-soprano ou contralto composées
et dédiées à G. Rossini. Leipzig: Bartholf Senff,
[ca. 1854].

Another French edition and an English edition are
also listed.

Opus 7

L'Art du chant: 12 études de style pour mezzo-soprano ou
contralto avec accompagnement de piano, op. 7.
Leipzig: B. Senff, [ca. 1880].

This is a reissue of an 1870 edition.

Opus 8

Eighteen vocalises for two voices, soprano and contralto.

This work includes studies of agility for soprano
with Italian words in variation form.

Opus 9

Studies of agility for mezzo-soprano with Italian words in
variation form.

Opus 10

Twenty-four vocalises for "deep contralto."

Opus 11

Douze études de style pour soprano ou mezzo-soprano, op. 11.
Vienna: Spina, n.d.

Opus 12

Dix-huit vocalises à deux voix pour mezzo-soprano et
contralto, op. 12. Vienna: C. A. Spina, n.d.

Opuses 14, 16, and 18

Studies of agility for soprano with Italian words and
in variation form.

Opus 21

L'Art du chant: méthode pratique in quatre parties, op.

21. Hambourg: A. Cranz, ca. 1877.

The four parts are listed as follows:

Part I: Exercices élémentaires et gradués

Part II: Trente vocalises pour mezzo-soprano

Part III: Douze vocalises à deux voix

Part IV: Six mélodies avec paroles pour mezzo-soprano

Seven other editions in English, French, or
German are listed as well. One enlarged edition
contains French, Dutch, English, and German texts.
Some later editions include only Part I or Parts I
and II.²¹

Opus 22

Eight vocalises for three voices, soprano, mezzo-soprano,
and contralto.

Opus 24

Two offertories with Latin words.

Opus 25

Two Ave Marias with Latin words.

Opus 26

Studies of agility for soprano with Italian words in
variation form.

²¹The first two parts of Op. 21 are currently
published as The Art of Singing, Book I: Elementary and
Graduated Exercises (New York: Belwin-Mills, n.d.); and
The Art of Singing, Book II: Thirty Vocalises for Mezzo-
Soprano (New York: Belwin-Mills, n.d.).

Opus 30

L'Art du chant, perfectionnement du mécanisme de la voix: Trente vocalises pour mezzo-soprano ou soprano, op. 30. Boston: Oliver Ditson and Co., [190?].

Opus 31

- A Theoretical and Practical Method of Singing, Op. 31.
Translated by A.M.R. and M.F. Barnette. Boston: Oliver Ditson Co., [ca. 1887].
Part I: Elementary and progressive exercises for the development of the voice
Part II: Exercises for the development of the voice in the form of vocalises
Part III (supplement): Combining articulation with vocalization: Vocalises for one, two, and three voices
Only English editions of Op. 31 are listed.²²

Opus 32

Thirty Vocalises for Mezzo-soprano. New York: G. Schirmer, 1897.²³

Opus 33

Fourteen vocalises for two voices, mezzo-soprano and contralto.

Opus 36

Dix-huit nouvelles études de style, moyenne difficulté, pour soprano ou mezzo-soprano, op. 36. New York: G. Schirmer, 1902.

An indication of Marchesi's longevity is found in the fact that five of her books of vocalises remain in publication, Opuses 2, 3, 21, 31, and 32. Apparently,

²²Op. 31 is currently published as A Theoretical and Practical Vocal Method, Op. 31 (London: Enoch and Sons, Ltd., n.d.: reprint ed., New York: Dover Publications, Inc., 1970).

²³Op. 32 is currently published as Thirty Vocalises for High or Medium Voice, Op. 32, ed. Estelle Liebling (New York: G. Schirmer, 1941).

each set of vocalises was designed to be progressive within itself. Vocalises were selected for study according to the voice, capabilities, and needs of the individual student.²⁴

It must be noted that only Opera 1, 21, and 31 are directed toward the fundamentals of vocal production. These sets provide shorter exercises designed to help the student with proper attack, registration, breath control, and tone quality. All the other sets are intended for the student's mastery of agility and proper stylistic execution for any musical occasion. Musical figures, such as diatonic and chromatic scales, repeated notes, various rhythmic figures, and arpeggios are stressed, along with ornaments important to the style of early nineteenth-century Italian opera.

In addition to her many vocalises, in at least two instances Marchesi also became involved with the repertoire itself. A collection of soprano arias, issued under her editing, includes some of her own suggestions for performance, including ornaments and cadenzas.²⁵ This collection included arias by Auber, Bellini, Donizetti, Meyerbeer, Mozart, and Rossini. Marchesi also

²⁴Marchesi, "Singing Lessons," Harper's Bazaar 33 (October 27, 1900): 1620.

²⁵Mathilde Marchesi, ed., Sammlung der beliebtesten Koloratur-Arien für Sopran (Leipzig: C.F. Peters, [1881]).

published a collection of cadenzas for female voices. Its first section, Points d'orgue, contains cadenzas written in most major keys. The second section, Variantes et points d'orgue, contains variations and cadenzas for specified locations within arias common to the repertoire. A few of these cadenzas were written for a specific person²⁶ (see the cadenza for Nellie Melba, Figure 8).

From other publications it can be deduced that Marchesi was held in high regard by the general public. In addition to her music publications and her reminiscences, her "Singing Lessons" appeared in Harper's Bazaar from 1900-1901²⁷ and in book form in 1901.²⁸ Between 1907-1908, the Ladies Home Journal printed her answers to submitted questions under the title, "Questions of

²⁶Mathilde Marchesi, Variantes et points d'orgue: composées pour les principaux airs du répertoire pour les élèves de ses classes de chant (Paris: Heugel and Co., 1900). The term point d'orgue is normally used to indicate a cadenza in a concerto. Marchesi's application of this term to vocal cadenzas appears to be unprecedented. See Willi Apel, ed., Harvard Dictionary of Music, 1969 ed., s.v. "point d'orgue."

²⁷Mathilde Marchesi, "Singing Lessons," Harper's Bazaar 33 (September 8, 1900): 1187-90, (September 15): 1235-8, (September 29): 1367-9, (October 13): 1507-10, (October 27): 1619-21, (November 10): 1742-5, (December 8): 1875-8, (December 22): 2025-9, 2166-9; 34 (January 4 1901): 49-52.

²⁸Mathilde Marchesi, Ten Singing Lessons (New York: Harper and Bro., 1901.)

Cadenza écrite pour M^{me} Melba.
40^e mesure.

The musical score is written for a cadenza, measures 40-51. It includes parts for Chorus (Chori.), Flute (Fl.), Clarinet (Cl.), and Piano (P.). The music is in 6/8 time and features various dynamics and tempo markings such as 'Ah!', 'Rit.', 'Prest.', and 'Rit. Hall.'.

FIGURE 8: MARCHESI: CADENZA WRITTEN FOR NELLIE MELBA. For insertion in "Il dolce suono" (The "Mad Scene") from Act II of Donizetti's *Lucia di Lammermoor*. From Marchesi, *Variantes et points d'orgue*, 51.

Vocal Students."²⁹ Her vocal principles were set down in numerous short articles, among them her "Correct Methods of Vocal Study," which appeared in The Music of the Modern World.³⁰ From these sources and from a number of her available books of vocalises, Marchesi's principles of teaching may be studied.

A Categorical Description
of Marchesi's Teaching

Attitudes and Approaches in General

More information is recorded concerning Mathilde Marchesi's attitudes and approaches to teaching than concerning those of Garcia, Battaille, or Stockhausen. Marchesi was of strong conviction and was very outspoken in regard to most aspects of her teaching principles. Several areas to which she devoted much written space are (1) the qualifications of both singing teachers and students, (2) the length of voice study which she required, (3) general procedures in the training of voices, and (4) descriptions of her vocal classes. Each of these areas deserves some analysis.

²⁹ Mathilde Marchesi, "Questions of Vocal Students," Ladies Home Journal 24 (September 1907): 3, (October): 2, (November): 2, 25 (February 1908): 3, (April): 3, (June): 3, (October): 36, (November): 29.

³⁰ Mathilde Marchesi, "Correct Methods of Vocal Study," The Music of the Modern World, 2 vols., ed. Anton Seidl (New York: D. Appleton and Co., 1895), 2:159-160.

Marchesi was strongly opinionated in regard to qualifications of singing teachers. While Garcia and Battaille occasionally denounced erroneous teaching, Marchessi frequently and vehemently spoke out against teaching abuses. The pages of the continuing column, "Questions of Vocal Students," offered ample opportunity for her to answer a singer's inquiries by condemning the teaching approach in question. Among the qualifications which she advocated, she urged that teachers have a thorough knowledge of the anatomy and physiology of the vocal organs. (Marchesi and Music, 180-81.) Since she insisted that teachers refrain from teaching by imitation, she felt that teachers need not be outstanding singers. ["Questions," 25 (October 1908): 36.] However, an apprenticeship period was believed to be indispensable for a teacher's preparation. For this reason, Marchesi maintained a group of "teaching pupils," whom she trained in pedagogical methods, who fulfilled their apprenticeship with beginning pupils under her supervision, and who were awarded certificates upon achievement of competence in the field. ("Singing Lessons," 33:1369.) The success of this procedure probably contributed to her advocacy of public examinations and certification of teachers of singing. (Marchesi and Music, 300-301.) A final qualification concerned the sex of the teacher. She firmly believed that only male teachers are qualified to

teach male students. For this reason, she left the men to her husband, Salvatore,³¹ while she concentrated all of her energy on the teaching of sopranos, mezzo-sopranos, and contraltos. ["Questions," 25 (October 1908): 36.]

Some difference of opinion apparently existed concerning qualifications of voice students. While Battaille possessed a great deal of faith in the ability of knowledgeable teachers to correct a faulty instrument (see p. 84), Marchesi, as well as Garcia, advocated that only "good" voices be trained: "Nowadays many people strive to build up mediocre voices; formerly, only good voices were chosen for cultivation." ("Correct Methods," 160.)

An attractive appearance, the gifts of the musician, quickness of conception, and the power of representation, together with requisites of relatively minor importance, a good ear, a sound and rich voice of extended compass, added to an ardent desire to become an artist--such is the essential equipment of those who would travel the fair, if thorny road that stretches out before them. ("Singing Lessons," 33:1187.)

Marchesi looked for qualities which would distinguish operatic singers from concert singers. She observed that, while the operatic singer needs "a strong voice, resonant in all its registers," she may rely on stage-settings, orchestra, and dramatic context to enhance her performance. The concert singer, however, having none of these, must

³¹Blanche Marchesi, Singer's Pilgrimage (Boston: Small, Maynard, and Co., 1923; reprint ed., New York: Da Capo Press, 1978), 39.

be finished in languages, musicianship, and interpretation, as well as in vocal production. Those who had limited ability in any of these areas were advised to seek other fields:

When intonation is uncertain, the voice small as to compass, or worn or displaced through other methods; when the outward appearance is displeasing and the disposition gloomy or reserved--I unhesitatingly advise the pupil against the choice of an operatic career. ("Singing Lessons," 33:1189.)

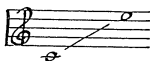
Marchesi's views on this matter being fairly rigid, some have used them as a basis for negative criticism of her teaching. Ruha Solis, a singer who was active in Paris, Vienna, Mannheim, and Rome with a number of Marchesi pupils, attributed Marchesi's success to good fortune:

If there ever was a teacher who was fortunate it was Marchesi. Imagine having Melba, Eames, Garden, Calve, and all the others come to you for training. They were all half-trained already, and more than that, they had the voice . . . without that any training is useless. Melba she left alone. Melba's voice was perfectly placed and Marchesi was smart enough not to tamper with it.³²

Marchesi was most conservative about the early training of girls who envision a singing career. Like Garcia, she felt that students should not begin voice study before the age of seventeen or eighteen. The teacher should be sure that the young lady's physical development is sufficient and that the voice is strong enough to cope with lessons and practice. ["Questions," 25 (February

³²George Pluck, "An Artist Remembers," Hobbies 64 (March 1959), 29-30.

1908): 3.] Instead of early vocal training, Marchesi advocated piano instruction, beginning at the age of seven or eight, and solfeggio within a limited compass of ten tones:



She urged that all singing cease at the age of twelve and throughout early adolescence. She extended this prohibition to include participation in choruses and ensembles of all types, since such activity prohibits listening and thereby controlling one's own voice.

["Questions," 25 (October 1908): 36.] Instead, she urged that the adolescent years be spent in study of literature, declamation, history, harmony, music history, and the French, German, and Italian languages. ("Singing Lessons," 33:1187-88.) While the years from 17-19 were ideal for the beginning of vocal study, Marchesi felt that a student could begin as late as the late twenties. ["Questions," 25 (October 1908): 36.] Marchesi's convictions concerning the length of study were equally strong. She required at least two years of study for the concert singer and three for the operatic singer. ("Correct Methods," 159.) Generally, she preferred three to four years of study for all students. ["Questions," 24 (October 1907): 2, 25 (February 1908): 3.]

Once Marchesi had carefully chosen her students according to the criteria described above, she trained them in what she believed to be the Italian method given her by Manuel Garcia:

This Italian method consists in the right placing of the voice; in the aesthetic emission of the sound; in the perfection of the respiration and the vocalization, as well as in grand sentiment, noble style, and above all, in the preservation of the voice. ["Questions," 24 (September 1907): 3.]

In addition, she felt that this method aided in training voices "according to the natural laws to produce a pure and mellow tone and to build the vocal instrument so as to acquire a technical precision." ["Questions," 24 (October 1907): 2.] She found most beginning voices to be "rough, hard, of small compass, unequal in strength and tonality, and frequently tremulous." (Marchesi and Music, 181.) To correct these imperfections, she believed the Italian ideals to be indispensable.

Like Garcia, Marchesi first gave her students a basic description of the physiology of voice production. ["Questions," 24 (October 1907): 2.] She next taught breathing and placement of the voice within the correct register zones. When placement was secure, the registers were united throughout the voice. The voice was then thoroughly trained in the development of an even scale by using "a progressive singing of all kinds of diatonic, chromatic, major and minor scales, arpeggios, gruppettos, and the trill." ["Questions," 25 (April 1908): 3.] Marchesi's use of the term

gruppetto was in reference to a two- or three-note figure intended "to be performed in such a way as not to interfere with the proper entrance of the principal notes." In other publications she used the term to designate a three-note turn, while the term mordente, which she defined as a "transient shake," apparently indicated an inverted mordent (see Figure 9).

If the exercises and vocalises which she published are any indication, Marchesi may have been the most exacting and thorough practitioner of scale studies of any of the Garcia teachers. Her published exercises present the various aspects of the technique in progressive order, with frequent admonitions that the student move to the next exercise or category only when ready. In Op. 21, Vol. 1, Elementary and Graduated Exercises,³³ and Op. 31, Part I, Elementary and Progressive Exercises for the Voice,³⁴ the order of the categories is as follows: (1) attack, (2) portamento, (3) diatonic and chromatic scales, (4) scales and exercises which stress rhythmic figures, (5) arpeggio studies, and (6) the messa di voce. Like Garcia, Marchesi urged that the messa di voce never be practiced by beginners, because this exercise requires

³³Marchesi, The Art of Singing, Op. 21, vol. 1: Elementary and Graduated Exercises.

³⁴Marchesi, Theoretical and Practical Vocal Method, Op. 31.

Con grazia (Gracefully)

The musical score is divided into two systems. The first system shows a vocal line with two 'Ah' notes and a piano accompaniment starting with a *mf* dynamic. The second system shows a vocal line with two 'ah' notes and a piano accompaniment. The piano part features complex trills and mordents in the right hand, while the left hand provides a steady harmonic accompaniment. The key signature is one sharp (F#) and the time signature is 3/4.

FIGURE 9: MARCHESI: STUDIES USING GRUPPETTOS AND MORDENTS.
 From *Thirty Vocalises for High or Medium Voice*, Op. 32,
 48; and *Twenty-Four Vocalises for Soprano*, Op. 3, 39.
 Used by permission of Belwin Mills Publishing Corp.,
 Melville, New York 11746.

"a certain amount of smoothness and flexibility." (Op. 21, vol. 1, 36.)

The latter portions of Op. 21, Vol. 1, and Op. 31, Part 1, are devoted to the ornaments: the appoggiatura, acciaccatura, mordent, gruppetto, and trill. Marchesi's order of presentation of exercises for the various categories of ornaments is very much the same as that followed by Garcia in Part 1 of the Traité.³⁵ Battaille, however, recommended no specific order, but argued a strong case for thorough and progressive exercises.³⁶ All three teachers regarded a fine trill to be the mark of a finished singer; Garcia and Marchesi were particularly exacting in their requirements for its development. However, while Garcia concentrated on the several types of trills and their stylistic employment in the repertoire,³⁷ Marchesi was more concerned with the careful vocal development of a clean trill:

The only way to acquire a good trill is to practice it in time, with the same number of notes to each beat. In the beginning it should be practiced slowly, but as the voice gains in suppleness the speed may be increased in corresponding proportion. To avoid fatigue female voices must commence practicing the trill in the medium register. ["Questions," 24 (October 1907): 2.]

³⁵Garcia, Art of Singing, Part 1, 15-43.

³⁶Battaille, De La Physiologie, 10-20.

³⁷Garcia, Art of Singing, Part 1, 38-42.

The following exercise for developing the trill was frequently recommended by Marchesi to be mastered first in the medium register, then transposed up to the head register: ["Questions," 25 (November 1908): 29.]



Marchesi preferred that her exercises always be performed on the Italian [a] vowel because it readily reveals tonal imperfections. ("Singing Lessons," 33: 1877.) Only after attack, breathing, and connection and equalization of the registers were mastered with the [a] did she allow her students to sing with texts. By this time, the student was to have progressively completed both the exercises and a number of the vocalises. The next step was the study of the Italian songs and arias of Carissimi, Scarlatti, Lotti, and Marcello, and later those of Rossini, Bellini, Donizetti, and Mozart.³⁸ Sufficient evidence exists to indicate that these careful procedural factors were passed to Marchesi by Garcia (see pp. 43-49). Evidence of the respect which was held for this progressive method of vocal

³⁸ Marchesi, "Singing Lessons," 33:1509, 2167; "Questions," 24 (September 1907): 3.

training may be found in Rossini's acknowledgement of Marchesi's dedication of her Op. 6 to him:

MY DEAR MADAME MARCHESI,--If I have delayed thanking you for the flattering dedication of your 24 Vocal Studies, you must kindly excuse me; the state of my health has hindered me. Bravissima, Madame Marchesi! Your Exercises, which I have gone through with the greatest interest, not only display a thorough knowledge of the human voice, but are written elegantly and clearly. They contain everything that is required for the development of an art which for so long I have seen treated as if it were a question of storming a barricade. May your interesting work prove useful to students, who nowadays seem to have strayed from the right path. Pray continue to teach the fine Italian method; it excludes neither expression nor dramatic effect, which unfortunately is becoming more and more a question of lungs, and this, too, without the necessary study that makes it very easy!

I remain, dear madame, yours gratefully,
G. Rossini. 39

Marchesi's admonitions concerning practice habits were as conservative as her careful, methodical approach to the development of the vocal instrument. Beginning students were told not to practice their scales, intervals, and elementary exercises more than thirty minutes a day, with the time divided into periods of ten minutes apiece. When the student progressed to the more advanced exercises, such as arpeggios, vocalises, and trills, she was to practice one hour a day, dividing the time into periods of fifteen minutes each. Marchesi warned against the contemporary practice of encouraging students to work two to three hours a day using mezza-voce or "half-voice." She believed this procedure produced habitual breathy production and

³⁹Marchesi, Marchesi and Music, 109.

harmed young voices. She urged that her singers practice "with full volume of tone, without forcing or screaming." She also insisted upon slow tempi until all scales could be sung evenly throughout the voice. ("Singing Lessons," 33:1876-77.)

Marchesi's lessons were administered in three weekly class sessions of thirty minutes apiece. ["Questions," 24 (September 1907): 3.] One of the most intriguing factors in Marchesi's teaching procedure is her well-organized system of group teaching. Designed to accommodate students in progressive levels of development, this system assured that the singers in each class would share similar needs. While studying with Garcia, who taught only private pupils, Marchesi noted a pronounced lack of confidence in his less experienced students. She determined, therefore, that she would provide as much public exposure as possible for all students from the very beginning of their study. Obviously, this procedure also allowed her to teach more students in the same length of time, provided their level of development was equal. From the outset, equality was assured by limiting her studio to singers with "good" voices. Marchesi utilized four classes in her school: a beginning class, preparatory class, concert class, and operatic class. In the beginning class, Marchesi directed the general musical education of her students as well as their elementary vocal development. Interval study by

solfeggio, sight-singing, and rhythmic awareness developed by "beating time" were as important at this stage as breathing, attack, and register equalization. ("Singing Lessons," 1508-09.) While all four classes provided frequent performance opportunities for her students, the beginning classes were also the scene of corporate learning situations. Marchesi did not hesitate to discuss and treat a pupil's vocal faults in the presence of other class members. ("Singing Lessons," 33:2028.) In the "Singing Lessons," Marchesi frequently provided accounts of typical class sessions. The following excerpt illustrates many aspects of her studio manner and procedure:

How many beginners are there to-day in this class? A deep contralto, two high sopranos, one dramatic soprano, and two mezzo-sopranos. Attend closely to the instruction imparted, not merely heeding that addressed to yourselves and intended to directly advance your studies, but to all, in order that, should circumstances compel you to teach, you may thoroughly understand the first instruction, the foundation of singing, as well as the rules of declamation, pronunciation, etc. In the last lesson I had so many explanations to offer that it was impossible to have more than one pupil sing; I hope, however, that you have imprinted in your memory what I told you concerning the singer's bearing, breathing, opening of the mouth, and so on. I will first proceed with my small but well-nourished little contralto that sang in the first lesson. Stand upon the platform, young lady, please, and begin. What! You wish to sing standing near me, at the piano? You say you did so with your former teacher? This I cannot permit. If you stand behind me I cannot see if you open your mouth properly, if you make grimaces, if you raise your eyebrows (as, unhappily, many do) until these touch the skull; in a word I cannot watch your bearing.

Quick, climb upon the platform and lose no time; there are five more young ladies here that must each have a good lesson. Now, do not cry! I do not like tears. There, that will do: you are courageous, I see: a real Spartan. ("Singing Lessons," 33:1743.)

When basic vocal development had been accomplished and Italian songs had been added to the repertoire, the singers were moved into the preparatory class. Here the student memorized and performed arias and songs of the Italian, German, and French repertoires, and received basic training in style of performance. In the preparatory class the decision was also made as to which field the singer should pursue, the concert career or operatic career. If necessary, some of Marchesi's vocalises were retained for study in the preparatory class. Her opera and concert classes, however, were solely for professional training. In the concert class, opera and oratorio arias were added to the continuing study and performance of Italian, German, and French song. The opera class was for the study of complete opera roles and for the preparation of singers to perform in opera houses in other countries as well as France. Roles from the operas of Mozart, Gluck, Beethoven, Meyerbeer, Weber, Thomas, Rossini, Verdi, Donizetti, Gounod, Delibes, Massenet, Saint-Saens, Humperdinck, Mascagni, and Puccini were taught. While Marchesi was negative about the requirements of Wagnerian opera upon young voices, she consented to teach the following roles because she found

them "the least trying for young throats:" Elsa in Lohengrin, Eva in Die Meistersinger, Elisabeth in Tannhäuser, and Senta in Der fliegende Holländer. ("Singing Lessons," 33:1508-10.) The annual recital programs, or "auditions," of Marchesi's classes were given in the Salle Erard while she was in Paris and were attended by hundreds. One such program, quoted in Figure 10, is indicative of both the repertoire studied and the wide range of countries from which she drew students.

Attack

While her terminology underwent some slight modification, Marchesi's concepts of attack as a part of the act of phonation were very similar to those of her teacher. Like Garcia and Battaille, she frequently used the term "emission" in reference to phonation and attack of the tone. ["Questions," 24 (September 1907): 3.] Her concept of the coup de glotte was also comparable to that of Garcia. She described it as a natural action of the vocal ligaments coordinated with the expiratory breath:

After the lungs are filled, it is necessary, for the production of a sound, that the pupil should hermetically close the glottis so that its extreme edges, called the Vocal Cords, may be set vibrating by the air which bursts through at the moment of Expiration. The Coup de Glotte requires, then a sudden and energetic approximation of the lips of

 CONCERT CLASS

- Ave Maria ("Méditation de Thaïs").....Massenet
Miss Katherine Gladhill (London) and M. Toussaint,
Violinist of the Grand Opera
- (a) "Von ewiger Liebe".....Brahms
(b) "Vittoria! vittoria!".....Carissimi
Mlle. Anna Thomsen (Denmark)
- (a) "Pur dicesti".....Lotti
(b) "Mattinata".....Tosti
Miss Amy Castles (Melbourne)
- (a) Air des "noces de Figaro".....Mozart
(b) Air de "Don Juan".....Mozart
Miss Zélie Rolker (New York)
- Le Rêve de Jésus (des Contes Mystiques).....Mme. Viardot
Mlle. Pauline Baltscheffsky (Helsingfors)
- Récit. et Air d' "Acis et Galatée".....Handel
Mme. Suzanne Pertat (Paris)
- (a) Elégie.....Massenet
(b) Air de "Terse".....Handel
Miss Florence Gau (Grahamstown, South Africa),
and M. Courrace, Violoncellist of the Grand
Opera
- Air de "Marie Magdaleine".....Massenet
Mlle. Ida Christon (The Hague, Holland)
- Air, "Le Barbier de Seville".....Rossini
Mlle. Marie Fowlin (St. Petersburg)
- (a) Air d' "Hérodiade".....Massenet
(b) "Noël Païen".....Massenet
Miss Lou Ormsby (Central City, Nebraska)
- Air de "Don Pasquale".....Donizetti
Mme. Tryphosa Batcheller (Boston)
- Air de "Titus".....Mozart
Miss Clara Adams (Chicago), and M. Lefebure, Clarinet-
tist of the Grand Opéra
-

FIGURE 10: RECITAL PROGRAM OF MARCHESI'S OPERA AND CONCERT CLASSES; DECEMBER, 1900. From "Singing Lessons," 33:2026.)

OPERA CLASS

- Air, "Les Dragons de Villars".....Maillard
Mlle. Margaret Kaftal (Warsaw)
- Due de "Romeo et Juliette".....Gounod
Mlle. Glacia Calla (Boston), and Mr. Laffitte, of the
Grand Opéra
- (a) Air "Le Cid".....Massenet
(b) Air "Samson et Dalila".....Saint-Saëns
Mlle. Elsie Marny (Breslau)
- Duet, "Aïda".....Verdi
Miss Augusta Doria (Boston) and M. Laffitte
- Waltz and Madrigal, "Roméo et Juliette".....Gounod
Miss Elizabeth Parkinson (Kansas City) and M. Laffitte
- Air, "Le Freischütz".....Weber
Mlle. Marie Romaneck (Stuttgart)
- Duo, "Le Roi d'Ys".....Lalo
Misses Parkinson and Doria
- At the Piano; M. Maugin, Conductor at the Grand Opéra,
and M. Frédéric Ponsot
-

FIGURE 10--Continued.

the glottis, an instant before Expiration commences.⁴⁰
(Op. 31, xii.)

Marchesi also preferred Garcia's method of practicing
the coup de glotte on the Italian [a] , "slightly darkened," and with loose jaw or "lowered chin." (Op 21, v.)
Typical of Marchesi's exercises for the coup de glotte is

⁴⁰Marchesi's description is similar to that used
by current voice therapists to describe a harmful glottal
attack. See Zemlin, 176-177.

the following excerpt, which was to be practiced by
 "avoiding all jerkiness as well as effort:"⁴¹ (Op.
 31, 1.)



Prior to 1895, when her article, "Correct Methods of Vocal Study," was printed, Marchesi modified her terminology for the coup de glotte. In obvious reference to the recent controversy between Victor Maurel and Garcia (see p. 32) she advocated changing the term to serrer la glotte, "drawing it together as the flutist and oboist draw their lips." ("Correct Methods," 159.) According to the context of the article, Marchesi's definition of the term remained the same.

When referring to the importance of a secure vocal attack, Marchesi frequently warned against the open glottis.

⁴¹This description appears to contradict the "sudden and energetic approximation of the lips of the glottis."

Concerning the opening of the glottis when attacking the tone: This new discovery, this fantasy of an overwrought brain, must be steadfastly opposed. For the completion of the tone, the closing of the glottis, on the two edges of which, as it is known, the vocal cords lie, is indispensable. The efficiency of the vocal cords must be increased by their being drawn together, provided always that in the attack of a tone a hard impulse . . . be sedulously avoided. ("Singing Lessons," 33:1237.)

This rigid adherence to Garcia's concept of attack stands in dramatic contrast to Battaille's method of compensation. It will be recalled that Battaille's method originated from his study of the relatively open glottis during phonation, and that it matured as a concept of replacing tension in the vocal ligaments with proportionately more air current (see pp. 110-114). Where Battaille felt that he had found a better emphasis, Marchesi aligned herself with Garcia's stroke approach. It is not clear whether Marchesi was directly referring to Battaille's method in such statements as that quoted above. If so, she did not realize that Battaille's idea of the open glottis was only the origin of the concept. For tonal clarity he required that the arytenoids be brought together, closing the glottis, but with less tension resulting in the vocal ligaments.

Marchesi and Battaille must have been acquainted. Both studied with Garcia in Paris during the years 1845-1847 and both were teaching in Paris from 1861-1865. Neither was found to refer directly to the other

in any of their writings or methods. However, Marchesi denounced the open glottis system of attack on several occasions. ("Singing Lessons," 1367, 1508.) Battaille was equally outspoken about abuse of the solfeggio, which Marchesi regularly used in the musical training of her singers.⁴² Both personalities referred to these respective methods as devices of misguided teachers. Other, more pointed statements indicate that open disagreement, if not rivalry, may have been present among the three Garcia teachers (see also pp. 153-154, 192, 194-196).

Registration

Since placement of the voice in the correct register zones was of fundamental importance to Marchesi, and since placement varies somewhat according to voice classification, Marchesi classified her singers very soon after study had begun. ["Singing Lessons," 33:1875; "Questions," 25 (November 1908): 29.]

A careful and accurate classification of the different voices is undoubtedly the essential elementary foundation of voice-culture and voice-preservation, and the ignorance of this fundamental precept is, no doubt, one of the principal causes of the actual decline of the art of song. ["Questions," 24 (October 1907): 2.]

Marchesi's sole criterion for voice classification was vocal quality. She found mezzo-sopranos to have a darker quality than sopranos, and lyric sopranos to have a

⁴²Battaille, De La Physiologie, 27.

"clearer" quality than dramatic sopranos. ["Questions," 24 (October 1907): 2.] If upper notes were undependable, Marchesi was prone to believe that the voice had been wrongly classified or wrongly placed by a former teacher. ["Questions," 25 (April 1908): 3.] Marchesi classified female voices as one of two types of contraltos, or as mezzo soprano, dramatic soprano, or "high, light Soprano (sfgato)."⁴³ (Op. 21, vi.) Ranges of properly placed female voices as derived from Marchesi's writings are presented in Figure 11.

Following classification, the next fundamental task was voice placement. Marchesi found correct registration to be "the Alpha and Omega of the formation and development of the female voice, the touchstone of all singing methods, old and new." (Op. 31, xiii.) Marchesi attempted her most serious physiological explanations in regard to registration, since she felt that students should have a clear understanding of this vocal phenomenon. She gave anatomical, physiological, and acoustical instruction in this area to all of her pupils with the aid of anatomical charts and an artificial human larynx. The physiological material which she entered in Op. 31 was apparently not the result of her own research and was somewhat

⁴³J. A. Fuller-Maitland describes the soprano sfogato as "a thin, acute voice of a somewhat veiled quality," in Grove's Dictionary of Music and Musicians, 5th ed., s.v. "sfgato," by J. A. Fuller-Maitland.

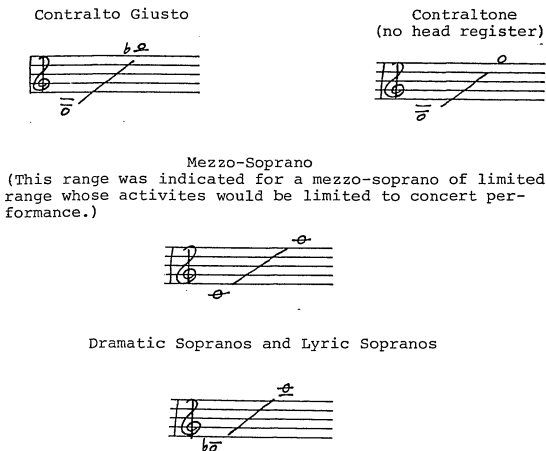


FIGURE 11: MARCHESI: VOICE CLASSIFICATIONS AND RANGES. From "Questions," 24 (November 1907): 2; and 25 (November 1908): 29.

erroneous. In the area of basic physiological principles, she listed three things necessary for the production of a sound: a motor, vibrator, and resonator. She identified these factors in the human body as the lungs, glottis, and walls of the cavities above the glottis. From this point on, however, inaccuracies crept in. She believed that the glottis increases and decreases the intensity

of the sound with corresponding increases and decreases in the number of vibrations of the vocal ligaments. Both Garcia and Battaille noted that differences in speed of vibrations are related to pitch, not intensity, and current science has proven that there is a direct relationship between pitch and rate of vocal-fold vibration.⁴⁴

Marchesi also fostered another unique opinion:

"It is the Larynx which, by change of position, directs the column of air escaping from the Vibrator (the glottis) towards the three resonant walls alternately." (Op. 31, xiii.) She conjectured that registration and resonance were a result of the same coordinating action. Using Garcia's definition of register, she imparted her own interpretation:

Since, then, each register of the voice consists of a series of consecutive and homogeneous sounds, of an essentially different kind to those of the other registers, it follows that the vocal apparatus should contain three quite distinct resonance chambers (walls). These three Resonators, formed of different organic tissues, impart, by reason of their special physiological properties, a distinct character to each series of sounds contained within the limits of each register: (Op. 21, xiv.)

Marchesi never clearly identified the anatomical position of the three resonators. One statement, however, may indicate her opinion: "The female voice has three registers: chest, medium, and head. It is the different

⁴⁴Garcia, "Observations," 408, and Battaille, Nouvelles Recherches, 43. See also Zemlin, Speech and Hearing Science, 182.

resonance that gives them their different names." ["Questions," 25 (October 1908): 36.] Marchesi's theory was, of course, far removed from that of Garcia and from physiological fact as well (see pp. 50-57).

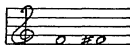
In her opinions of register limits and of training voices to achieve a homogeneous quality throughout the registers, Marchesi was much closer to Garcia's concepts. She found changes in timbre to be natural indicators of register changes in untrained voices. ["Questions," 25 (October 1908): 36.] Marchesi's designations of register limits, while they varied slightly in her various writings, may be seen in Figure 12.⁴⁵

Marchesi's three-register concept was inextricably bound to her theory of three resonators. She preferred to reserve the term falsetto for a register which she believed belongs exclusively to men's voices. In this aspect, we find a rather direct assertion concerning the two-register theory and possibly Battaille himself:

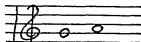
⁴⁵In studies using female singers which correlated sonographic analyses of each register and *passaggio* area with perceptual tests, John Large and Thomas Murry found Marchesi's *passaggio* areas to be compatible with test findings for the chest-medium adjustments. The findings also were compatible with the theory that different registers are produced by different laryngeal adjustments. Data from this study on the medium-head *passaggio* area were much less substantial, but tended to support laryngeal adjustment in this area also. See John Large and Thomas Murry, "Studies of the Marchesi Model for Female Registration," *Journal of Research in Singing* 1 (January, 1978), 1-14.

Upper Limits of the Chest Register

Contralto and Mezzo-Soprano

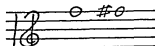


Soprano



Upper Limits of the Medium Register

All voices



Some Sopranos

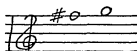


FIGURE 12: MARCHESI: DESIGNATIONS OF REGISTER LIMITS.
From Op. 31, xv; and "Questions," 24 (November 1907): 2.

Empiricism, which in these days appears to struggle more than ever against all rules of modern pedagogy, has put in circulation, among other absurdities, the assertion that the female voice only possesses two registers, viz.: Chest and Falsetto. This grave error has also been endorsed by several eminent modern physiologists, who have persuaded themselves that they have established this theory, after their observations with the laryngoscope, but who are incapable of making comparative experiments with their own vocal organs. (Op. 21, xiv.)

Clear definition of the limits of the three registers was of utmost importance to Marchesi. Otherwise, "there will always be a series of uncertain, weak and false tones in singing scales with full voice, or in sustained passages." (Op. 21, vi.) She

considered it dangerous, however, to work each register separately. ["Questions," 25 (June 1908): 3.] Instead, she used one basic principle for blending the registers. Chest tones should be sung with considerable brightness, but in ascending scales the last two notes of the chest should be slightly darkened or "closed" in quality, in order to make them blend with the medium register. In descending from medium to chest, the last two notes of the medium should be brightened or "opened" to match them with the chest. The same principle was applied to blending of the medium and head registers. ("Singing Lessons," 33:2168, and Op. 21, xv.) For applying this principle, she recommended that the student practice the chromatic third in the passaggio areas of the voice. ["Questions," 25 (November 1908): 29.] At the same time, the student should study Marchesi's elementary exercises and scales (i.e., those in Op. 21 and Op. 31) which "are intended to place every note of the voice and develop its volume and its compass, as well as to even its registers." These were to be sung slowly with equal intensity. Variations in intensity and vocal color were not to be attempted until the "second period" of study, when songs in Italian were studied. ["Questions," 24 (November 1907): 2.]

Marchesi ascribed many vocal faults to erroneous register placement. Since specific criteria were expected from well-placed voices, voices which did not fulfill

these expectations were viewed as misplaced instruments:

When you hear that the passage of the registers is quite even, that the emission of every sound of your voice is easy and natural, that your intonation is perfect, and that the whole of the possible range of the voice has been developed, then you can say that your voice has been properly placed. ["Questions," 25 (February 1909): 3.]

A persistent problem which Marchesi encountered was that of switching the registers. Breaks or "hiccoughs," breathiness in some notes, and the chevrotement were often declared to be the result of using the head register in the medium range or carrying the chest or medium too high. ["Questions," 24 (November 1908): 2; 25 (February 1909): 3; 25 (October 1908): 36.] The term chevrotement was used by both Marchesi and Battaille to define an objectionable vibrato, or "bleat." Marchesi believed this problem to be caused by relaxation of the extrinsic laryngeal muscles due to violation of register limits. ["Questions," 24 (November 1907): 2.] Battaille believed the muscular release to be caused by excessive air power against the cricothyroid muscles. Obviously, he felt that his method of compensation would prevent the chevrotement, if it could not correct it.⁴⁶ Marchesi almost always found that careless register placement resulted in "a series of uncertain, weak and false tones in singing scales with full voice, or in sustained passages." (Op. 21, vi.)

⁴⁶Battaille, De la physiologie, 30-31.

Marchesi's major objection to the two-register theory was the probability that it fosters the act of carrying the medium register too high. She decried the neglect of the head register by some teachers who feel that "it is not worthwhile, being too weak." ["Questions," 25 (April 1908): 3.] She acknowledged that the head register is weaker than the other two registers, but found that it becomes stronger with practice. ["Questions," 25 (October 1908): 36.] The only exception to her theory was one of two types of contralto, the contraltone, which she found to lack a head register. The contraltone has only a two-octave range, therefore, while the contralto giusto possesses some notes in the head register⁴⁷ (see Figure 12).

Marchesi's exercises for acquiring evenness throughout the vocal registers were constructed on the same principles as those of Garcia. Like Garcia and Battaille, she included exercises on the port de voix or portamento early in her books of exercises. Some of these are practically identical to those used by Garcia (see p. 45 and pp. 98-99). All three teachers used the concept of adding wider intervals as fluency with the exercise improved. Other exercises introduced arpeggiated portamentos (see

⁴⁷These may have been Marchesi's own subsidiary designations for the contralto voice. No other reference to these terms could be located.

Figure 13). Marchesi's exercise which stressed the chromatic third was intended to be practiced in slow, regular sixteenth notes: (Op. 21, 5.)



Marchesi's scales, like Garcia's, were designed to help the student to add perfected notes progressively to her vocal range (see Figure 14). Gradually, the full vocal range was required in various types of scale figures and in combinations with portamentos (see Figure 15). For light sopranos, who usually acquire flexibility more readily than singers of other classifications, she required practice of more complex figures (see Figure 16). Like Garcia, she regarded exercises of two-, three-, four-, six-, and eight-note figures to be extremely valuable "for blending the registers, increasing flexibility, and for accuracy of intonation." (Op 31, 24.) Her directions for their practice were similar to other procedures:

. . . they must be sung slowly at first, breathing at intervals, and transposing them a semi-tone at a time, higher or lower to suit the voice . . . the speed may be increased and the frequent breathing omitted when the pupil is sufficiently advanced. (Op. 31, 24.)

Port de voix chromatique et diatonique. I Portamento in Tones and Semitones.



Port de voix diatonique.

Portamento in Diatonic Tones.



Port de voix.

Portamento.



FIGURE 13: MARCHESI: PORTAMENTO EXERCISES. From Op. 21, 4-5, and Op. 31, 5. Used by permission.

SCALES.

The voice in its natural state is as a rule rough, uneven, heavy, and of limited compass. Having secured accuracy of intonation in the attack of each sound (by the stroke of the glottis) the next task should be the development of volume, power, and compass of the voice, and the blending of the registers. The pupil should not at first attempt to sing the complete scale, but begin by practising exercises of two three and four notes, etc., otherwise there is a risk of never succeeding in any kind of passage.

All scales should be transposed throughout the compass of the voice a semitone at a time up and down, care being taken not to over-exert the extreme limits of the voice; they should be sung with perfect equality of length and power as well as with correct intonation of the half tones. When the descending scale is out of tune it is because the semitones are too wide.



FIGURE 14: MARCHESI: FUNDAMENTAL SCALE EXERCISES. From Op. 31, 6. Used by permission.

The image displays a musical score for advanced scale exercises by Marchesi. It is organized into four systems. The first system is labeled 'PIA. VO.' and consists of three staves. The second and third systems are labeled 'PIANO' and each consists of three staves. The fourth system is also labeled 'PIANO' and consists of four staves. Each system contains complex scale exercises, with the word 'Etc.' appearing at the end of each line of music to indicate that the exercise continues. The notation includes various musical symbols such as clefs, key signatures, and dynamic markings.

FIGURE 15: MARCHESI: ADVANCED SCALE EXERCISES. From Op. 31, 8, 10. Used by permission.

The image displays a musical score for voice and piano, specifically scale exercises for light soprano. It is organized into two main systems, each containing five staves. The first system consists of four single staves and one grand staff (treble and bass). The second system also consists of four single staves and one grand staff. The music is written in 3/4 time with a key signature of one sharp (F#). The exercises are rapid scale passages for the voice and piano accompaniment.

FIGURE 16: MARCHESI: SCALE EXERCISES FOR LIGHT SOPRANO.
From Op. 21, 16, 19. Used by permission.

EXERCISES ON TWO NOTES.



EXERCISES ON THREE NOTES.

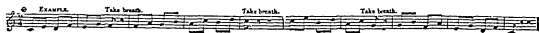


FIGURE 17: MARCHESI: EXERCISES OF MULTIPLE FIGURES.
From Op. 31, 24-25. Used by permission.

The image displays a musical score for Marchesi's Scales with Ornamentation, Op. 31, 22. The score is organized into three systems, each featuring a piano accompaniment and a melodic line. The piano part is marked 'PIANO.' and the melodic line is marked 'EXAMPLE.' and 'Take breath.'.

The first system shows a melodic line with a key signature of one sharp (F#) and a 2/4 time signature. The piano accompaniment consists of a steady eighth-note bass line and a more complex treble line. The melodic line is marked 'EXAMPLE.' and 'Take breath.'.

The second system continues the melodic line with a key signature of one sharp (F#) and a 2/4 time signature. The piano accompaniment consists of a steady eighth-note bass line and a more complex treble line. The melodic line is marked 'EXAMPLE.' and 'Take breath.'.

The third system continues the melodic line with a key signature of one sharp (F#) and a 2/4 time signature. The piano accompaniment consists of a steady eighth-note bass line and a more complex treble line. The melodic line is marked 'EXAMPLE.' and 'Take breath.'.

FIGURE 18: MARCHESI: SCALES WITH ORNAMENTATION. From Op. 31, 22. Used by permission.

As in other examples, Marchesi's procedures, if not her exercises themselves, have much in common with Garcia's figured exercises (see Figure 17). One particular pattern was apparently a favorite of Marchesi and Garcia. It consisted of an ascending scale followed by a trill, turn, or other ornamental passage about the upper octave, and ended by a descending scale (see Figure 17 and pp. 47-48).

Breathing and Coordination

Like voice placement, breathing was taught from the beginning of a student's study with Marchesi. While Garcia and Battaille recommended that breathing activity take place in the lower ribs and upper abdominal regions, Marchesi apparently accepted only abdominal breathing. She believed that abdominal breathing is a natural action, comparable to that which occurs "without any intervention of the will, as during sleep," and that it should be taught as such. (Op. 31, xi.) Marchesi's teaching approach began by having the student assume "the most natural posture:"

The body must be held upright, likewise the head. The shoulders are to be drawn back without constraint, and the chest to remain quite free. Any stiffness of the body must be avoided, in order to secure the complete independence of the organs of phonation during their working. ["Questions," 25 (February 1908): 3.]

Consistent with her attitude toward natural breathing for singing, Marchesi never assigned exercises which stressed breathing independently of the singing act. The one example she gave of a breathing exercise emphasized

efficient phonation on sustained tones:

There is no other exercise to learn breath control than to inhale slowly, and when the lungs are full close the glottis in attacking the sound, and exhale the air⁴⁸ slowly, keeping the vocal cords tightly closed. ["Questions," 25 (October 1908): 36.]

After the student understood the concept of natural breathing, Marchesi recommended that it be practiced with the repertoire itself. In one instance, she suggested passages in the oratorios of Bach and Handel for practice of lengthy, sustained passages. ["Questions," 24 (September 1907): 3.]

Stylistically, Marchesi recommended that the student use the more lengthy rests within vocal music for full inhalation, taken quietly and slowly. In shorter rests she recommended use of the "Italian method mezzo-respiro (half-breath), somewhat quicker and shorter than the full breath, but without making any effort, contraction, or disagreeable noise."⁴⁹ ["Questions," 25 (April 1908): 3.] She found breath management to be the sole controller of the messa di voce, the crescendo being brought about by the steady increase of air directed from the lungs to the vocal folds and the decrescendo

⁴⁸"keeping the vocal cords tightly closed" reflects the dominating concern which the Garcia teachers had in regard to attack. If the vocal folds are "tightly closed," phonation may either be impossible, or, at best, improper, due to excessive tension. See Zemlin, 209.

⁴⁹"Contraction" may imply excessive tension, since contraction of certain muscles of inhalation is always necessary in the breathing process.

by the opposite action. ["Questions," 25 (June 1908): 3.]

A final Marchesi admonition concerned the limitations put on breathing by contemporary fashion. She condemned corsets because they interfere "with the freedom of the waist" and "prevent the inflation of the lungs at the base." (Op. 31, xii.) Garcia also had objections to corsets. When one soprano auditioned for his studio, Garcia sent her away with the instruction,

Thank you . . . will you please go home at once, take off that dress, rip off those stays, and let your waist out to at least twenty-five inches! When you have done so you may come back and sing to me, and I will tell you whether you have any voice.⁵⁰

In regard to coordination of breath management with glottal attack, Marchesi was not as verbal as Garcia or Battaille. To Marchesi, ultimate finesse in breath control is dependent on fine coordination with attack and retention of a closed glottis. ["Questions," 25 (November 1908): 29.] Marchesi was insistent that attack, register placement, and breath control as a coordinated unit be perfected before the progressive areas of repertoire and performance be attempted. ["Questions," 25 (April 1908): 3.]

Resonance and Diction

While expressive control of timbre was regarded as a mark of a finished singer by Marchesi (Op. 21, vii),

⁵⁰Mackinlay, Garcia the Centenarian, 247-248.

she never referred to deliberate use of specific colors, such as Garcia's voix clair and voix sombre. Instead, she apparently sought the student's best tone quality as the first priority. In the student's later development, vowel colors could be altered for interpretive meaning: "In order to properly render the sense of the situation, it is necessary, therefore, to close or open the vowel of a word in accordance with the sentiment to be expressed." (Op. 31, xvii.)

As discussed above, Marchesi's registration theory was combined with her theory of resonance. (See pp. 152-153.) While she erroneously described the hard and soft palates as principal resonators of the voice,⁵¹ ["Questions," 25 (November 1908): 29] and implied that the head and chest play some role in resonation as a part of registration (see pp. 152-153), she rejected attempts to consciously direct tone to a resonator or control it from one physiological location. ["Questions," 24 (October 1907): 2.] Neither did she advocate use of the senses of feeling and hearing by the student in regard to perceived tone quality. Instead, she apparently relied fully on wise

⁵¹Current science designates the principal resonators in the human voice as those cavities along the vocal tract whose size and shape are altered by tongue position, particularly, the cavity behind the tongue and the mouth cavity in front of the tongue. See Peter B. Denes and Elliott N. Pinson, The Speech Chain: The Physics and Biology of Spoken Language (Baltimore: Waverly Press, Inc. 1963), 58-65; and Gunnar Fant, Acoustic Theory of Speech Production (The Hague: Mouton and Co., 1960), 121-22.

register placement and sound vocal technique to serve the student's perception of production. In one case, however, she urged that the c#² in the medium register be directed "toward the hard palate, else it takes on a nasal tinge."⁵² (Singing Lessons," 33:1237.)

Like Garcia and Battaille, Marchesi believed that freedom of the organs of phonation is required before the tone is attacked. ["Questions," 25 (October 1908): 36.] Unlike the other two teachers, who dealt with laryngeal position as an influencer of tone, she mentioned laryngeal position only once, and then in regard to its relationship to pitch and register. Here she merely urged that register limits be observed in order that the larynx be free to adjust its position as necessary. ("Singing Lessons," 33:2028.) Instead of the loose jaw, she insisted "that the lower jaw be depressed," (Singing Lessons," 33:1508), a factor which also influences mouth position:

The mouth in singing must be open in quite a natural way, depressing the chin, as if about to pronounce an Italian A. Here it is advisable to remind the student that the mouth can be opened only downward, the upper part being immovable, hence the necessity of pushing down the chin. ["Questions," 24 (November 1907): 2.]

⁵²This attempt at directional control probably resulted in a lifting of the soft palate, thereby correcting the excessive nasal quality.

Like Garcia, she objected to gross alterations of mouth position while singing with words, and recommended that the student correct this habit by singing before a mirror. ["Questions," 24 (October 1907): 2.] Some of Marchesi's statements concerning mouth position were made in regard to a contemporary teaching practice which emphasized singing with a smile. She found this to cause the voix blanche, which she could not tolerate. ("Correct Methods," 160.)

In one instance, Marchesi also mentioned tongue position and its influence on tone. She noted that when Garcia found that a student's tongue tip was rising and obstructing the tone, he was not above depressing it with a smooth object, such as a "paper-cutter." Marchesi concurred: "To bring forth a beautiful and resonant tone the tongue must be quite flat, so that a throaty tone is avoided . . ."⁵³ ("Singing Lessons," 33:1508.)

Since correct mouth position and the Italian [a] were joint components in Marchesi's concept of basic vowel color, other vowels were added to the student's practice only after vocal registration, breathing, and technique were secure. In Op. 31, Part I was devoted to basic technique and exercises on [a] , Part II to vocalises on [a] , and Part III to vocalises with words (see p. 126). Part III was provided "for accustoming the pupil to pronounce the

⁵³From the context of this material, it is apparent that what Marchesi meant by a flat tongue was tongue tip which remains down, since a flat position of the body of the tongue makes vowel production impossible. See pp. 210-213.

words distinctly, without affecting the emission of the voice, and not neglecting to correct the faults of pronunciation." (Op. 31, xvi.) For the vocalises in Part III, she chose the Italian language, since it is free of "guttural consonants." Another reason for her preference for Italian was that its open vowels are conducive to good vocal quality and tend to prevent the voix blanche. ("Correct Methods," 160.) In Part III, the student was expected to seek equality throughout the vocal range on the five Italian vowels [a], [e], [i], [o], and [u], and correct defective articulation. She urged that the student carefully practice consonants until their production takes place freely without altering "the equilibrium of the tension and the regularity of the vibrations of the vocal cords, because the movements of the tongue jerk the larynx." (Op. 31, xviii.) In another instance she urged that as many consonants as possible be produced with the aid of the tongue tip, particularly [r], [l], [n], [d], and [t]. She stressed the "sharp" pronunciation of Italian double consonants and of all consonants at the beginning of words. ("Singing Lessons," 33:2168.) When the student could enunciate freely in Italian without compromising vocal quality, singing in additional languages was begun:

When once a complete mastery has been obtained over the mechanism of the voice, as well as over all the degrees of power, expression, and of quality and colour of sound that the vocal organs can produce, and when the movements of the tongue and lips are thoroughly under control, then the pupil can easily

learn to sing in any language, without sacrificing beauty of sound to clear pronunciation of each syllable, or distinct pronunciation to beauty of sound. (Op. 31, xvii.)

V. THE TEACHING PRINCIPLES OF STOCKHAUSEN

Biographical Material

Julius Stockhausen was born in Paris on July 22, 1826, the son of Franz Stockhausen (1792-1868), a harpist and composer, and Margarete Schmuck Stockhausen (1803-1877), a well-known soprano. His early musical experience included training in piano, violin, cello, and organ in Gebweiler and Strassburg.¹ After receiving his early education in Alsace, he studied piano in Paris from 1845-1846 with Charles Hallé (1819-1895) and Camille Stamaty (1811-1870).²

Stockhausen was again in Paris in 1848 and became involved in defending against the same insurrection which had disrupted Charles Battaille's debut at the Opéra Comique. As much for room and board as for other reasons, Stockhausen enlisted in the National Guard, and while in service in Paris sought out Manuel Garcia as a teacher.³ After three months of study with Garcia, Stockhausen

¹International Cyclopedia of Music and Musicians, 10th ed., s.v. "Stockhausen, Julius."

²Grove's Dictionary of Music and Musicians, 5th ed., s.v. "Stockhausen, Julius," by Sir George Groves.

³Mackinlay, Garcia, the Centenarian, 166-167.

received an invitation from the Swiss city of Basel to sing the title role in Mendelssohn's Elijah. Although the young baritone was recovering from "catarrh and sore throat" brought on by bivouacking outdoors with the regimentals, Garcia trained him in the role and helped him memorize it without overworking his recuperating voice.⁴ The combination of Garcia's teaching and Stockhausen's ability apparently wrought quick results. A review of the Basel performance of May 26, 1848, speaks of Stockhausen's, "fresh, spacious, full-ringing voice, consummate style, and unequalled declamation"⁵

Like Marchesi, Stockhausen followed Garcia to London in 1849 and studied with him until 1851. During this period Stockhausen performed widely, both in England and on the continent. He performed Schubert's Die schöne Müllerin a number of times and sang at the London Philharmonic Society on three occasions. His first appearances in opera took place in Mannheim from 1852-53. From 1857-59 he was engaged at the Opéra Comique, where he was most successful in the role of Seneschal in Jean de Paris, by Adrien Boieldieu (1815-1883).⁶ Although he actually

⁴Ibid., 160.

⁵Friedrich Chrysander, "Berichte: Basel," Allgemeine musikalische Zeitung 50 (26 May 1848): 406.

⁶Mackinlay, Garcia, the Centenarian, 195; and Grove's Dictionary, s.v. "Stockhausen,".

lacked the physique for this role, he "compensated for this shortcoming with the quality of his voice."⁷

Stockhausen apparently filled the years between the Mannheim and Opéra Comique engagements with recital performances. In 1856, in Leipzig, he appeared at the Gewandhaus in two recitals in which he sang operatic arias of Boieldieu, Bach cantata arias, Italian songs, and Schubert lieder.⁸ In the same year, Stockhausen appeared at the Rhine Music Festival in Düsseldorf in Elijah. In other festival performances he sang arias by Boieldieu and songs by Schubert, Mendelssohn, and Schumann.⁹ During the Rhine festival an intimate friendship with Johannes Brahms (1833-1897) was established which very soon grew to become an influential factor in the careers of both men. Within a month after the festival Stockhausen had presented two recitals with Brahms as accompanist. Both performances "created a furore" among the audiences.¹⁰

⁷Soubies and Malherbe, Histoire de l'Opéra Comique, 1:282. Translated by the writer.

⁸Alfred Dörffel, Geschichte der Gewandhausconcerte zu Leipzig: vom 25 November 1781 bis 25 November 1881 (Leipzig: 1884), 142.

⁹Karl Geiringer, Brahms: His Life and Work (London: George Allen and Unwin, Ltd., 1948), 62; and Florence May, The Life of Johannes Brahms, 2 vols. (London: William Reeves, 1905), 1:208.

¹⁰Florence May, The Life of Johannes Brahms, 2 vols. (London: William Reeves, 1905), 1:208-209.

Thus began a friendship which came to include in its small circle Joseph Joachim (1831-1907) and Clara Schumann (1819-1896). Stockhausen met Joachim and Frau Schumann at a musical evening organized by Brahms in 1859, not long after Stockhausen's last performance with the Opéra Comique.¹¹ From that point on, the four names are closely intertwined in biographies, collections of letters, and accounts of recital performances. They frequently took recital tours as a group, and before long, Joachim, Stockhausen, and Frau Schumann enthusiastically began to champion Brahms' music and to introduce it to the public. In this way, Stockhausen's name became associated with some of Brahms' most important lieder:

It was the unanimous opinion of all cognoscenti that none could be compared with [Stockhausen] as singer of the songs of Schubert, Schumann, and Brahms. It has been said that he was to Brahms' songs very much as Joachim was to Brahms' chamber music.¹²

Many of Brahms' finest songs were written for Stockhausen, who, in turn, introduced them to concert audiences.¹³ Some important examples of this practice are the first six songs of Brahms' *Magelone* lieder. These were composed to texts by Ludwig Tieck (1773-1853),

¹¹Geiringer, Brahms, 62.

¹²Hans Barkan, trans. and ed., Johannes Brahms and Theodor Billroth: Letters from a Musical Friendship (Norman: University of Oklahoma Press, 1957), 17, n.

¹³Geiringer, Brahms, 62.

published in 1861, and dedicated to Julius Stockhausen.¹⁴
 This same year was one of the busiest for Brahms, Clara Schumann, Joachim, and Stockhausen. There were frequent recital tours and soirees during which the circle of friends performed, with Frau Schumann or Brahms accompanying Stockhausen:

Joachim and Stockhausen came in April for the Philharmonic concert of the 16th, and the brilliant season closed with Stockhausen's and Brahms' soirees on the 19th, 27th and 30th of the month. At the first two concerts, at Hamburg and Altona respectively, the entire series of Schubert's "Schöne Müllerin" was given; and at the last--who can imagine a more enthralling feast of sound than the performance of Beethoven's melting love-songs, "To the Distant Beloved," the very thought of which brings tears to the eyes, sung by Stockhausen to the accompaniment of Brahms, followed by our composer's lovely second serenade, and this by Schumann's "Poet's Love-Songs." Happy Hamburgers, happy Stockhausen, happy Brahms, to have shared such delights together.¹⁵

The feelings within the circle must certainly have been tried in 1863 by the failure of Brahms to receive the post in Hamburg as Director of the Philharmonic Concerts and of the Singakademie. Instead, the position was awarded to Julius Stockhausen, apparently due to his immense popularity, which might serve as an attraction to the public and to singers for the Academy's choirs.¹⁶
 While Brahms never recorded his feelings, Joachim was

¹⁴The remaining nine songs of this cycle were published in 1868. See May, Life of Brahms, 1:285.

¹⁵May, Life of Brahms, 1:283.

¹⁶Geiringer, Brahms, 74.

appalled. In a letter to a friend, dated January 31, 1863, he remarked:

You know how highly I esteem Stockhausen's talent, and he is certainly the best musician among singers, but how anyone, having to choose the director of a concert institution between him and Johannes, can decide for the former, I with my limited musical understanding cannot comprehend.¹⁷

Although most sources assert that friendships and musical partnerships were not allowed to suffer from this incident, recital activity involving the circle appears to have dwindled for several years. This may also have been due to the time required for Stockhausen's new duties. No further descriptions or recital activity involving Stockhausen with the other members are notable until 1867, when the baritone sang the Magelone lieder on a Leipzig program with Clara Schumann accompanying.¹⁸ By 1868 much of the old activity had been resumed. In that year Brahms and Stockhausen together mounted a very successful recital series which took them to Hamburg, Dresden, Berlin, and Copenhagen. They also appeared in soirees and recitals together in Hamburg, Budapest, and Vienna, during which Stockhausen performed some of Brahms' most recent songs, among them the duets, Op. 28, which the bari-

¹⁷ May, Life of Brahms, 2:335.

¹⁸ Dörffel, Geschichte, 223.

tone sang with his pupil, Fraulein Girzik.¹⁹

In 1869 Stockhausen resigned his post in Hamburg to become chamber singer to the King of Württemberg at Stuttgart, residing in Canstatt. His recital tours continued with Joachim, Clara Schumann and Brahms. In 1870 he took his pupil Sophie Löwe²⁰ to England for their appearances together on the Popular Concerts.²¹ While there, in 1871, Brahms' German Requiem received its first English performance before an invited audience in London. Stockhausen both conducted the performance and sang the baritone solos.²² Of interest during the same period was a London party at which Pauline Viardot-Garcia joined Stockhausen in the performance of two duets from Brahms' Op. 28.²³

In 1874 Stockhausen left Stuttgart to take on the direction of the Gesangverein in Berlin.²⁴ Stockhausen's name now begins appearing in concert programs and reviews as conductor and vocal teacher as well as lieder singer. In 1874 he successfully conducted several Berlin

¹⁹No dates are available for Girzik. She is occasionally mentioned in regard to concerts involving Stockhausen and Brahms. See May, Life of Brahms, 2:403 and 425-432.

²⁰No dates are available for Löwe. In 1884 she published the English translation of Stockhausen's Gesangsmethode.

²¹Grove's Dictionary, s.v. "Stockhausen."

²²May, Life of Brahms, 2:433.

²³Ibid., 2:451

²⁴Grove's Dictionary, s.v. "Stockhausen."

performances of Elijah and Handel's Judas Maccabeus which were described in the Allgemeine musikalische Zeitung.²⁵

Stockhausen moved to Frankfort-am-Main in 1878 to head the department of singing at Hoch's Conservatory. Due to a contract dispute with the school's administrator, Joseph Joachim Raff (1822-1882), he resigned his position the following year and took private pupils in his home. In 1882 he returned to his position at the Conservatory.²⁶ He retired from this position in 1898 and from thenceforth taught only private pupils. His Gesangsmethode appeared in two volumes in 1886 and 1887, later followed by a shorter work, Gesangstechnik und Stimmbildung.²⁷ He remained close to Joachim, Clara Schumann, and Brahms throughout his life. Stockhausen's last meeting with Brahms occurred when the two of them and Joachim attended Clara Schumann's funeral together in 1896.²⁸ Stockhausen died in Frankfurt-am-Main on September 22, 1906.²⁹

Accounts of Stockhausen's performing ability are consistent in their praise of his taste, style, and attention to communication:

²⁵Friedrich Chrysander, "Berichte: Berlin," Allgemeine musikalischer Zeitung 49 (4 March and 9 December 1874): 136 and 779.

²⁶Grove's Dictionary, s.v. "Stockhausen."

²⁷Baker's Biographical Dictionary, s.v. "Stockhausen, Julius."

²⁸May, Life of Brahms, 2:658.

²⁹Grove's Dictionary, s.v. "Stockhausen."

The rich beauty of the voice, the nobility of the style, the perfect phrasing, the intimate sympathy, and, not the least, the intelligible way in which the words were given--all combined to make his singing of songs an unforgettable experience.³⁰

Those who corresponded with Brahms frequently mentioned the composer's songs and Stockhausen in the same sentence.³¹ Occasionally this correspondence included descriptive accounts:

I shall never forget an evening at Stockhausen's when he sang Dichterliebe to Frau Schumann's accompaniment. It was all so fresh and spontaneous. I had never heard him do that particular cycle, and was quite carried away at times by his profound sincerity and vigour.³²

In this regard, one statement by Brahms himself reflects his admiration for Stockhausen:

I have known two people who understood something of music. One of them plagued himself in vain for a lifetime to learn absolute pitch. The other took no pains because he knew he could never acquire it. One of them was called Julius Stockhausen; the other--Richard Wagner. Still, you know, in spite of their lack, both had some idea of music!³³

The contributions of Julius Stockhausen had major influence in the areas of nineteenth-century teaching and performance. As a teacher, he published important methods

³⁰ Ibid.

³¹ Hannah Bryant, trans., and Max Kalbeck, ed., Johannes Brahms: The Herzogenberg Correspondence (London: John Murray, 1909, 158; and Barkan, 144).

³² Elisabeth von Herzogenberg to Brahms, 13 July 1882. Bryant, 161-162.

³³ Robert Haven Schauffler, The Unknown Brahms: His Life, Character, and Works (New York: Dodd, Mead, and Co., 1933), 181.

and utilized unique approaches developed from Garcia's method. He numbered among his students Hermine Spies (1857-1893), Antonia Kufferath (1857-1939), Felix von Kraus (1870-1937), Anton Van Rooy (1870-1932), Max Alvary (1859-1923), Anton Sistermans (1865-1926), Max Friedlander (1852-1934), Sir George Henschel (1850-1934), and the Americans, Robert Blass (1867-1930), Putnam Griswold (1875-1914), and Clarence Whitehill (1871-1932).³⁴ It is somewhat ironic that, while Garcia and Marchesi were negative toward Wagner and trained their singers particularly for the florid styles of Bellini, Donizetti, and Rossini,³⁵ a number of Stockhausen's students were best known for their Wagnerian roles. Some of Stockhausen's basses and baritones who made their fame in the Wagner festivals of Bayreuth and elsewhere were von Kraus, Van Rooy, Alvary, Blass, Griswold, and Whitehill.³⁶

As a performer, Stockhausen brought the attention of the public to the songs of Schubert, Schumann, and Brahms,

³⁴ Die Musik in Geschichte und Gegenwart, 1965 ed., s.v. "Stockhausen, Julius," by Hans Kuhner; International Cyclopedia, s.v. "Singing;" and Mackinlay, Garcia, the Centenarian, 195.

³⁵ Garcia, Hints on Singing, iv; and p. 143 of this project.

³⁶ For descriptions of these singers, see their separate entries in Baker's Biographical Dictionary; and in K. J. Kutsch and Leo Riemans, A Concise Biographical Dictionary of Singers: From the Beginning of Recorded Sound to the Present, trans. Harry Earl Jones (Philadelphia: Chilton Book Co., 1969).

and helped to standardize their performance on concert programs. While he was highly acclaimed as a recitalist on the continent, he broke new ground in England:

Stockhausen was the first . . . to make the Lied of Schubert and Schumann konzertfähig. The songs of Schubert and Schumann had been reserved for family use by enthusiastic amateurs, but Stockhausen was the first singer of note to bring them within reach of the public by introducing them habitually in concert programmes. To do this in Germany was an innovation requiring enterprise rather than courage. To do it in England forty and fifty years ago was a piece of splendid audacity which endeared Stockhausen to the small band of Schubert and Schumann worshippers, but exposed him to the hostility of the leading professional critics of the day . . . He succeeded at length in extorting from the reluctant Chorley . . . the admission that in Schubert and Beethoven he was unrivalled in accent and passion.³⁷

Stockhausen's Publications

One major publication, the Gesangsmethode, embodies most of Stockhausen's viewpoints and approaches to vocal teaching. There is some discrepancy concerning its date of publication. While some references note its appearance in two consecutive volumes in 1886 and 1887 (see p. 180), an English translation by Stockhausen's pupil Sophie Löwe appeared in 1884.³⁸ Since Löwe's work was a translation of the original, it is probable that Stockhausen's method was published sometime prior to

³⁷C. L. Graves, "Julius Stockhausen," The Spectator 97 (27 October 1906): 619.

³⁸Julius Stockhausen, A Method of Singing, trans. Sophie Lowe (London: Novello, Ewer, and Co., 1884).

1884. According to Julia Wirth-Stockhausen's biography of her husband, the Gesangsmethode was published in 1884. A shorter work, Gesangstechnik und Stimmbildung, appeared in volumes for high and low voice in 1886 and 1887 and was devoted to vocal exercises.³⁹ The latter work was unavailable for examination by the writer.

A number of articles concerning Stockhausen and his teaching appear in the Allgemeine musikalische Zeitung, edited by Stockhausen's friend and colleague, Friedrich Chrysander (1826-1901). While several of these articles are devoted to descriptions of the circumstances of his contract dispute with Raff,⁴⁰ and reviews of concerts by himself, his choruses, and his student soloists, others review in detail his edition of Cherubini canons for use as singing exercises⁴¹ and provide reports on Stockhausen's first year as master of his own singing school.⁴² The latter two sets of articles are utilized to endorse canon and

³⁹Julia Wirth-Stockhausen, Julius Stockhausen: Der Sanger des Deutschen Liedes (Frankfurt-am-Main: Englert and Schlosser, 1927), 442-43.

⁴⁰Friedrich Chrysander, "Das Hoch'sche Conservatorium und seine Direction," Allgemeine musikalische Zeitung 15 (27 September-13 October 1880): 618-654.

⁴¹Friedrich Chrysander, "Cherubini's Canons als Gessangungen," Allgemeine musikalische Zeitung 15 (16 June-23 June 1880): 369-388.

⁴²Friedrich Chrysander, "J. Stockhausen's erster Jahresbericht uber seine Gesangschule in Frankfurt a.M." Allgemeine musikalische Zeitung 16 (10 August-17 August 1881): 510-520.

solmization for building musicality, to underscore the importance of good diction for singers, and to explore the influence of vowels upon tone quality.

The Gesangsmethode, in the Löwe translation, A Method of Singing, was the major source from which Stockhausen's teaching approaches were drawn for this research. This work draws much more heavily upon outside sources than the methods of Garcia, Battaille, and Marchesi. While Stockhausen's method is much more than a compilation of ideas, it relies heavily upon theoretical, pedagogical, and phonetical works for support and clarification of his views, and even in some cases for vocal exercises. Some of the sources from which Stockhausen drew vocal exercises, ornamentation exercises, and stylistic examples were Anleitung zur Singkunst, the translation of Tosi by J. F. Agricola,⁴³ Musica moderna pratica, by J. A. Herbst (1588-1666),⁴⁴ Gesanglehre, 1886, by Franz Hauser (1794-1870), Le nuove musiche, 1602, by Giulio Caccini (1550-1618), and Traité complet de l'art du chant, by Garcia. He corroborated his views concerning the acoustics, physiology, and development of singing voices with material drawn from Garcia and Battaille, from an important work on the physiology of speech production by Eduard Sievers

⁴³See p. 10.

⁴⁴Johann Andreas Herbst, Musica moderna pratica (Frankfurt: 1653).

(1850-1932), Grundzüge der Phonetik,⁴⁵ and from a work by Emma Seiler (d. 1887), a singing teacher who had been associated with Hermann Helmholtz in his research on vowel production, Altes und neues über die Ausbildung des Gesangorgans.⁴⁶

The Gesangsmethode contains lengthy introductory materials which set apart the author's views on the various physiological and functional aspects of voice production. These materials are embodied in an introductory section entitled "The Twelve Paragraphs," in which Stockhausen discussed vowel and consonant production, attack, mouth position, tone, larynx position, breathing, and registration. In this section he also treated some approaches to vocal teaching. The body of the Gesangsmethode is devoted to specific areas of building technique and singing style, with vocal exercises and examples included for each area. These areas include attack and sustaining the voice, the portamento, legato and aspirated styles, ornamentation, scales, and staccato and martellato, or marked singing styles.

⁴⁵ Eduard Sievers, Grundzüge der Phonetik (Leipzig: Breitkopf and Hartel, 1901).

⁴⁶ Emma Seiler, Altes und neues über die Ausbildung des Gesangorgans (Leipzig: Leopold Voss, n.d.); translated as The Voice in Singing, trans. W. H. Furness (Philadelphia: J. B. Lippincott and Co., 1868).

A Categorical Description
of Stockhausen's Teaching

Attitudes and Approaches in General

Published descriptions of Stockhausen's attitudes and approaches toward vocal teaching are limited to the years immediately following the establishment of his own singing school in his home in Frankfurt-am-Main, October 1, 1880. Obviously, his aspirations concerning vocal teaching found the greatest realization through a pedagogical program guided by his own administration. He brought into this self-administered teaching program, in addition to many years of performance and teaching experience, some concerns born of frustration with his own training. An example of this frustration is found in an 1872 letter written from Stockhausen in Stuttgart to "French artists," who had apparently claimed that the Paris Conservatory was responsible for Stockhausen's success as a performer. Stockhausen informed his correspondents that Garcia, Jenny Lind, and Pauline Viardot-Garcia were responsible for the bulk of his knowledge and training in singing. As for his education at the Paris Conservatory:

An artist is not made in a singing class with some French or Italian airs. He requires that which is worthy and of the best quality, either in Paris or anywhere else. But in regard to your Conservatory, where the polka is danced in the classes of Mr. Ponchard, where no one received, properly speaking, a musical education during my time, where the names of Bach and Handel are never mentioned in harmony

classes, I became so frustrated that I left.⁴⁷

Stockhausen placed great emphasis upon the development of musical independence from the very beginning of a singer's education with the use of two musical aids, canon and solfeggio. He stressed unaccompanied canons as a chief means of developing independence. In Friedrich Chrysander's review of Stockhausen's edition of Cherubini's canons, the following assertion is excerpted from Stockhausen's preface:

I must emphasize that the beginner rarely becomes musical through solo singing of monodic songs, lieder, and arias. Choral singing likewise is not ideal. The accompaniment aids the lieder, while in choruses the accompaniment and the participation of many singers adds too much support. Only one procedure can truly develop independent singers: repeated unaccompanied practice of polyphonic pieces with one singer on each part.⁴⁸

In the Gesangsmethode, some of the first vocal exercises are pieces by J. J. Fux (1660-1741) in canonic style. These were apparently intended to be performed by a solo instrument on the top part and a solo voice on the bottom part (see Figure 19). Subsequent exercises, taken from G. W. Teschner (1800-1883), consisted of a number of imitative two-part pieces in various tempi and meters, intended for high and low voice or solo voice and piano (see Figure 20).

⁴⁷ Julia Wirth-Stockhausen, Julius Stockhausen, 360. Translated by the writer.

⁴⁸ Chrysander, "Cherubini's Canons," 386. Translated by the writer.

Moderato *mf* *J. H. Fux*

Soprano *mf*

FIGURE 19: EXERCISE A CANON IN UNISON. From Stockhausen, *A Method of Singing*, 18-19.

In subsequent studies Stockhausen discouraged the use of piano to support student singers. He found this practice, prevalent at that time in German singing schools, to be fostered by pressure to produce singers quickly. "While instrumentalists devote seven, eight, yea even ten years to their training, singers are brought to the stage in as

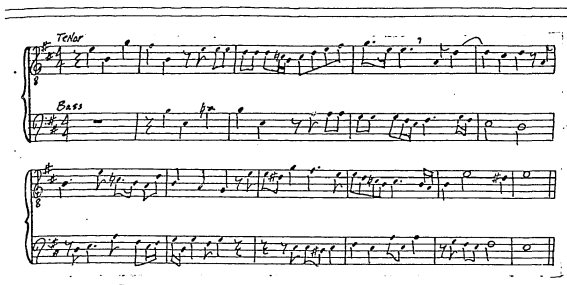


FIGURE 20: IMITATIVE EXERCISE FOR HIGH AND LOW VOICE. From Stockhausen, A Method of Singing, 30.

little as four months."⁴⁹ Stockhausen felt that the piano, "tuned in intervals that are only approximately correct," serves only to hide intonation problems in singers. He suggested instead that pitch be given and corrected with a violin or tuning fork, and that the best accompaniment for student voices is another voice.⁵⁰

The other means for developing musical independence, solfeggio, was stressed by Stockhausen for beginners because of the coordination of various factors involved in its practice:

Valid for one hundred years for the joining of word and pitch, solfeggio of syllables, such as do, re,

⁴⁹Chrysander, "J. Stockhausen's erster Jahresbericht," 111. Translated by the writer.

⁵⁰Stockhausen, A Method of Singing, 10.

mi, fa, sol, la, ti, assuredly brings flexibility to the vocal medium . . . in singing by naming each note rather than mere vocalization, beginners will simultaneously exercise the ears, lungs, larynx, and vocal organs. In addition, instead of fatigue, muscular dexterity is assured, and, when the teacher is willing, the beginner can extend solfeggio to vocal exercises, especially in the middle voice.⁵¹

Stockhausen advocated that teachers return to certain elementary graduated procedures utilized by earlier teachers. However, he employed no direct reference to any historical teacher or pedagogical work to document these tenets:

The old Italian and German masters, whose schools produced such excellent singers of both sexes, show by their writings that their first endeavour was to teach their pupils how to form beautiful tone and to render their voices flexible and of a telling quality. There was no question of exercises in a large compass, nor of developing a powerful tone on one vowel, as is now the fashion. In the elementary instruction -- that is to say, in the solfeggio -- our ancestors began by teaching how to establish and sustain the voice. They next proceeded to exercises in a small compass, such as are provided by ornaments (*appoggiaturas*, turns, mordents, etc.), and then let their pupils practice on the five elementary vowels and without accompaniment. We have to proceed in the same way if we wish our pupils to acquire not only a powerful, but also a beautiful and expressive⁵² tone, a flexible voice, and good pronunciation.

Stockhausen further stressed slow vocalises in solfeggio for beginners, followed by songs and airs in solfeggio

⁵¹Chrysander, "Cherubini's Canons," 386. Translated by the writer. From song phrases included in his method with solmization syllables superimposed, it is apparent that Stockhausen advocated a fixed-do system. See examples in *A Method of Singing*, 20.

⁵²Stockhausen, *A Method of Singing*, 15.

rather than the adaptation of words to "inferior vocalises."⁵³ The latter practice was occurring fairly often during Stockhausen's time. Some of the vocalises published by Mathilde Marchesi's husband, Salvatore, are notable examples.⁵⁴ While Mathilde Marchesi's name was never mentioned, Stockhausen stringently opposed her practice of singing vocalises on [a]. He believed this "uninterrupted activity" to be tiring for the larynx, and found that clear syllables provide articulation as well as musical independence:

The solmization syllables build into the execution a clavier-like touch, which, when properly utilized, must insure distinctiveness. Almost like the keys of the organ, the syllables are the intervening principle between the will and the instrument.⁵⁵ They are the beginning of ease in vocal production.

Stockhausen also believed the practice of solfeggio to be an important means of stressing good consonant and vowel production for beginning singers. This factor is treated in more detail in subsequent analyses of his concepts of resonance and diction.

Stockhausen limited solfeggio exercises to the middle of the vocal range. He conservatively felt the diatonic scale to be too difficult for beginning singers,

⁵³ Ibid., 20-21.

⁵⁴ Salvatore Marchesi, Twenty Elementary and Progressive Vocalises, Op. 15 (New York: G. Schirmer, 1899).

⁵⁵ Chrysander, "J. Stockhausen's erster Jahresbericht," 517. Translated by the writer.

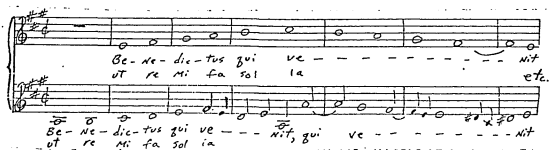
since "few beginners have eight notes of equal power in their voice."⁵⁶ Instead, he used the hexachord, which he and Friedrich Chrysander called "the home of the voice," because of its more limited compass, because it does not include a complicated tritone, and because it contains only one interval of a half-step.⁵⁷ Particularly for young girls beginning their training, Stockhausen found the following hexachords to contain the proper compass: $g^1, a^1, b^1, c^2, d^2, e^2$ for the high soprano; $e^1, f\sharp^1, g\sharp^1, a^1, b^1, c\sharp^2$ for the mezzo-soprano; and $c^1, d^1, e^1, f^1, g^1, a^1$ for the alto.⁵⁸ Consistent with his emphasis upon canon and imitative exercises, Stockhausen found the hexachord to be well-suited to contrapuntal vocal exercises. One example which he used was from the Missa ut re mi fa sol la or Missa super voces musicales by Giovanni Pierluigi da Palestrina (1525-1594):⁵⁹

⁵⁶Stockhausen, A Method of Singing, 10.

⁵⁷Ibid., 10; A further discussion of this matter is found in a letter from Stockhausen to Chrysander, 26 June, 1880, in Julia Wirth-Stockhausen, "Friedrich Chrysanders Briefe an Julius Stockhausen," Die Musikforschung 7 (1954), 194.

⁵⁸Chrysander, "J. Stockhausen's erster Jahresbericht," 517-18. No solmization syllables were included in this description.

⁵⁹Stockhausen, A Method of Singing, 18.



The contrapuntal exercises which were adapted from Fux in the Gesangsmethode were used to teach vocal independence and simultaneously to stress good tone quality and vocal production in the most accessible notes of the voice.

Stockhausen's singing school was comparable in two aspects to that of Marchesi: he utilized teaching assistants for a good portion of the work, and the success of the school eventually led to an important series of concert performances by his students. However, Marchesi concentrated most of her efforts with beginners on sight-singing and vocal technique, while with more advanced students she emphasized technique and style. Languages and keyboard were taught outside her own studio. Stockhausen put more emphasis on the development of independent musical skills from the very beginning of a pupil's study. While he did not find the chorus ideal for developing musicianship, he involved his students in choral activity and performance because of his concern that important German choral works be performed and appreciated.

Marchesi, on the other hand, was totally opposed to the chorus as a pedagogical medium. In Stockhausen's school each student was instructed in solo song in two half-hour sessions weekly and was enrolled in a preparatory class for the establishment of vocal technique, also for two half-hour sessions per week. For two hourly sessions weekly the students were instructed in the solfeggio, counterpoint and harmony, choral singing, in the Italian language, and in elocution. Stockhausen personally taught each student in solo song, carefully supervised the preparatory class, and conducted the chorus. His most advanced students served as teaching assistants by teaching basic technique to those in the preparatory class, while outside teachers were employed for the other areas. Apparently the preparatory class was conducted collectively with all beginners, while the instruction in solo song took place under Stockhausen privately.⁶⁰

Stockhausen stressed diligent work by his pupils. He differed with Marchesi concerning time spent in vocal practice and diversified training for concert singers and opera singers, and, while a direct reference to Marchesi does not occur, his views speak plainly enough:

It is a great mistake to imagine that young voices should be cultivated in a different way for the stage and for the concert-room; and worse still to think that diligent practising destroys the freshness of a voice. It is immaterial whether the stage or the concert-room is to be the singer's

⁶⁰ Julia Wirth-Stockhausen, Julius Stockhausen, 431.

field of activity: the cultivation of the voice and the general studies must be the same.⁶¹

During the years 1881-1883, Stockhausen presented his students and choirs in a spring series of matinees and evening performances. His resumption of teaching duties with the Hochschule in 1883 interrupted these performances temporarily. From 1892-1896 he was once again able to present his students, this time in an important Frankfurt series of Populäre Sonntagskonzerte. In addition to providing performance experience and challenge for many talented singers, his intention was to present the finest in vocal and choral repertoire. In addition to standard Italian arias, much emphasis was placed on the general repertory of German lied, while his choirs performed a wide range of acappella and accompanied works. Stockhausen was conscious of his community and invited community singers to participate with his chorus. This enabled him to perform with a 30-35 voice chorus. Consistent with his concern for musical independence, he placed great emphasis upon polyphonic acappella works in the first months of rehearsal. Later, accompanied pieces from the large repertory of German choral works were added. Stockhausen delighted in programming little-known works of German composers. Representative works of this genre which were brought to Frankfurt by Stockhausen for

⁶¹Stockhausen, A Method of Singing, 135.

his concerts were: "Lazarus, eine Osterkantate," by Schubert (1797-1828), "Das leiden und sterben Jesu," by Schütz (1585-1672), the "Zigeunerleben," "Deutschen Volkslieder," and "Talfellied," by Brahms, and "Der Rose Pilgerfahrt," by Schumann (1810-1856).⁶²

Attack

While he accepted Garcia's coup de glotte as a valid technique, Stockhausen could not separate attack from vowel formation:

In the same way that the out-rushing air meeting an obstruction in the cavity of the mouth produces a consonant, so the breath escaping through the narrowed aperture in the vocal chink produces a vowel sound. Compare, for instance, pa and a, ba and a, ma and a, while imitating with the vowel attack the relaxation of the tensions on the lips. It will then be found that, in order to sing with expression, the vowel attack has to be quite as varied as the consonant attack. The latter being visible serves to explain the former, which is invisible. (A Method, 9.)

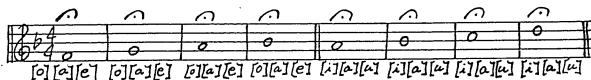
While the above views are consistent with some of Garcia's concepts of vowel formation (see p.57), they are also unique in that two distinct functions, attack and vowel formation, are believed to occur together in one co-ordinated action.

Stockhausen always emphasized that the coup de glotte must be accompanied by a lowering of the larynx. If this action does not occur, "it makes the notes poor and thin, and in the middle register often throaty and

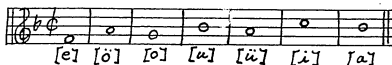
⁶² Clara Wirth-Stockhausen, Julius Stockhausen, 436-41.

non-resonant." (A Method, 9.) The examples are taken from exercises which Stockhausen used to establish attack and vowel production with a stabilized or lowered larynx. Such exercises helped the singer to combine vowel flow with sustained notes: (A Method, 25, 28.)

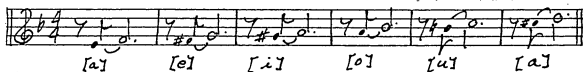
Attack with "closed vowels:"



"Shocks of the glottis with fixed larynx:"

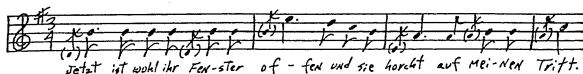


While he acknowledged the historical validity of the appoggiatura as utilized for an attack, and quoted this example from Musica moderna prattica: (A Method, 15)



Stockhausen objected to its overuse in current German vocal practice. An example which he cited is as follows: (A

Method, 15)



Registration

While Stockhausen relied on the research of both Garcia and Battaille for his concepts of registration, his views were more consistent with those of Garcia. He believed that the mature human voice possesses three registers: chest, falsetto or "middle-voice," and head. He depended upon Battaille for physiological distinctions between chest and falsetto: ". . . for the chest voice the whole width of the vocal cords is required, for the falsetto only two-thirds." (A Method, 11. See also p. 91.) Properly, male voices should use only chest and falsetto, the head voice being too much like that of women and girls. This distinction contributes to the clarification of descriptions used by Garcia (see p. 42). Stockhausen believed female voices to use all three registers, except for very high sopranos, who use only falsetto and head. Female voices principally use falsetto, male voices the chest. Ranges, pitches common to all voices, and registers of each voice classification according to Stockhausen are shown in Figures 21 and 22.

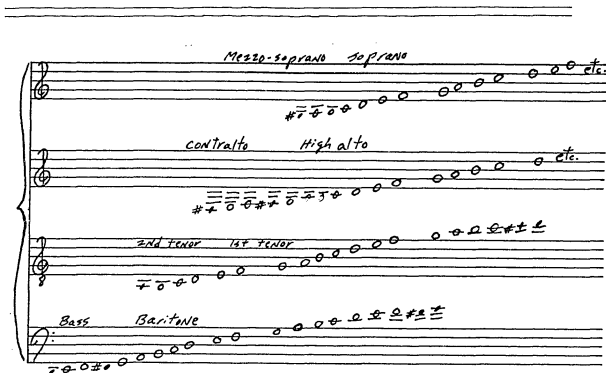


FIGURE 21: STOCKHAUSEN'S TABLE OF THE FOUR VOICE CLASSIFICATIONS AND PITCHES COMMON TO ALL. From A Method, 12.

Stockhausen stressed a moderately low and stable larynx position for register equalization. With the larynx fixed moderately low for the "sombre quality," he found that chest and falsetto registers can be blended in ascending the scale. Conversely, in descending the scale, Stockhausen urged that a "clear quality of tone" be used for blending the registers. (A Method, 13.) This procedure is comparable to that of Marchesi, who used it for transitions between chest and medium with her female students (see p. 155). However, Stockhausen believed that a physiological principle was involved. He theorized that,

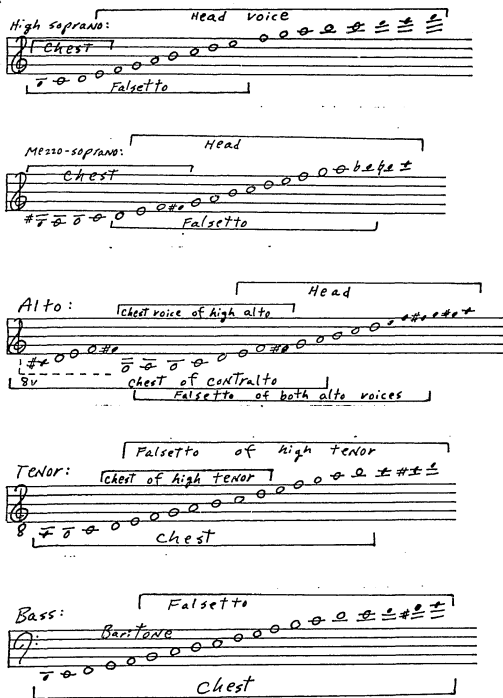
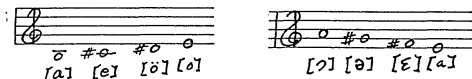


FIGURE 22: STOCKHAUSEN'S TABLE OF REGISTERS. From A Method, 12.

in ascending, the epiglottis covers the larynx to some extent on the vowels [o], [ö], [u], [ü], acting somewhat like the hand of a horn player: (A Method, 13.)

. . . the notes d^{#1} and e¹ get the covered tone required for the transition into the following register more easily on the closed vowels than on the open [a], and therefore they assimilate better with the f#. One might say that the singer was singing con sordini. In descending one should vocalize on the clear vowels, in order to give the falsetto more power; for instance:



As a demonstration of register evenness, Stockhausen used the messa di voce, which, in his opinion, can only be executed in the middle of the voice using two registers. In other words, the singer must practice the notes common to both registers by using the falsetto for the piano portions of the exercise, with a crescendo into chest for the forte portion, and a return to falsetto for the piano closing. This description of the physiological events which occur in the messa di voce is exactly that of Garcia in his Art of Singing. (A Method, 17. See also Garcia, Art of Singing, 33.) Battaille, however, in using the laryngoscope to observe the action of the glottis during execution of the messa di voce, was unable to note any registration changes. (Battaille, Nouvelles

particular voice classification. By contrast, this was only infrequently done by Garcia and the other teachers. (See Figure 24.) Portamento exercises were carried step by step into larger extensions. The most extensive portamento exercises included the following: (*A Method*, 45.)

The exercises are arranged in three systems. The first system has two staves (treble and bass clef) with notes and portamento lines. The second system has two staves with notes and portamento lines, and vowel labels [a], [i], and [u] with dashed lines below them. The third system has two staves with notes and portamento lines, and vowel labels [a], [i], and [u] with dashed lines below them. The fourth system has two staves with notes and portamento lines, and vowel labels [a], [i], [u], [ay], [iy], [u], and [u] with dashed lines below them. The fifth system has two staves with notes and portamento lines, and vowel labels [a], [i], [u], [ay], [iy], [u], and [u] with dashed lines below them.

[a]----- [i]----- [u]-----

[a]----- [i]----- [u]-----

[a]----- [i]----- [u]----- [ay]----- [iy]----- [u]----- [u]-----

do mi do do sol do do do do mi do mi sol do sol do do do

FIGURE 23: STOCKHAUSEN'S PORTAMENTO EXERCISES FOR THE MEDIUM VOICE. From *A Method*, 39.



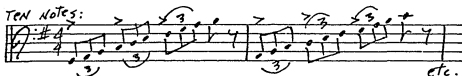
FIGURE 24: STOCKHAUSEN'S PORTAMENTO EXERCISES FOR SPECIFIC VOICES. From A Method, 45.

Stockhausen, like the other teachers, devoted a large portion of his method to scales of all varieties for the purpose of unification of the entire vocal range. His scales emphasized step-wise movement in all types of rhythmic figures, often combined with the portamento. The styles are comparable to those used by Garcia and the other teachers and are shown in Figure 25. By contrast with the other teachers, Stockhausen did not use many exercises which involved difficult intervals. In many instances in his Gesangsmethode, he utilized portions of important arias for illustrations and exercises. For the more complex scale movements, he urged the use of coloratura lines from Bach and Handel. Some of those he

Nine Notes:



Ten Notes:



Eleven Notes:



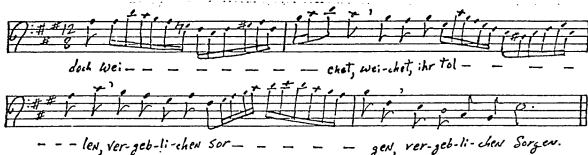
FIGURE 25: EXAMPLES OF STOCKHAUSEN'S SCALE EXERCISES.
From *A Method*, 100.

emphasized are in Figure 26.

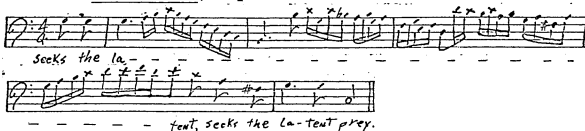
Breathing and Coordination

The areas of breathing and coordination drew the least amount of treatment by Stockhausen. However, these areas were no less important to Stockhausen and his

a. From Cantata No. 8, Liebster Gott, wann werd' ich sterben, J. S. Bach.



b. From The Seasons, Haydn.



c. From a chamber duet, Handel.



d. From Susanna, Handel.



FIGURE 26: STOCKHAUSEN'S SCALE STUDIES EXCERPTED FROM BAROQUE ARIAS. From A Method, 98, 105, 110.

concepts were consistent with those of the other teachers. Stockhausen would not allow high chest or clavicular breathing because "the restless state in which the larynx is thus kept is fatal to the development of the voice and to technique in general." (A Method, 11.) He distinguished between two proper types of breathing for singers: diaphragmatic breathing he found to be sufficient for the quick or half breath, while rib-breathing is "indispensable" for full breaths. Stockhausen also found that breathing through the nose aids diaphragmatic activity. (A Method, 11.)

Stockhausen urged an emphasis on the legato style from the very beginning of a singer's study in order to facilitate breath control. He taught beginners to control only a small amount of exhaled air in singing and to resist the temptation to use too much air in uncontrolled, erratic volumes. (A Method, 46.)

In regard to coordination of the various parts of the vocal mechanism, Stockhausen recommended that the singer learn as much as possible about the physiology of three principle parts involved in singing activity, the lungs, larynx, and "cavity of articulation." His approach appears to imply that the singer should exercise as much direct control over these parts as possible:

If . . . he sings a note too sharp or too flat, he will not . . . appeal to the muscles of the chest or diaphragm, nor in order to correct the note sing louder, or alter the movements of the mouth or

the quality of the vowel, a mistake so often made by beginners. He has now learnt that it is the work of the vocal chords directed by the ear to create the necessary tensions. (A Method, 3.)

Stockhausen urged that, while the singer concentrates on the part of the vocal apparatus being utilized for a certain function, care should be taken to coordinate the functions of all three areas involved in the singing action. A final area of coordination then becomes necessary, that of uniting inward emotion with the three areas, the result being beauty of expression:

The varied qualities of each tone, of each vowel, are dependent on the form of vibrations, and can then only express our feelings when force and quality of tone are in harmony with the laws of acoustics. (A Method, 3.)

In order to achieve coordination of breathing and vocal apparatus, Stockhausen urged practice of the portamento. Before the portamento can be perfected, however, he recommended that the nessa di voce be successfully practiced, thereby uniting two registers on one pitch in coordination with breath control. (A Method, 37.)

Resonance and Diction

Stockhausen's attitudes toward resonance cannot be separated from his stress on the elements of speech and their foundation for production of the singing voice. He also found vocal music and speech to be inseparable elements in the communication of vocal music. He expressed much disappointment with the faulty diction used by singers

of his time and urged a stronger emphasis upon the study of speech elements in colleges and secondary schools. He believed that when a student has mastered the subtle differences in the various vowels and consonant sounds, when these "come to be formed according to their correct classification, and when all speech elements are efficiently coordinated, only then are the foundations of tone production and beautiful enunciation successfully laid." (Chrysander, "J. Stockhausen's erster Jahresbericht," 511. Translated by the writer.) In his teaching approach, Stockhausen urged that the student thoroughly understand the various functions of vocal organs as they are involved in speech production and implement this knowledge by means of the following rule: "The greater the activity in the cavity of articulation (the mouth and upper throat), the less there is in the larynx, and vice versa." (A Method, 5.) Therefore, he taught that good diction as executed by physiological parts above the larynx aids in the retention of laryngeal freedom.

Stockhausen taught vowel production by means of a chart which he named "The Singer's Alphabet," placed in Figure 27. Here he observed the influence of tongue position on vowel sounds and noted vowels and corresponding tongue positions along the sides of a triangle. High tongue positions and their bright vowel sounds were placed on one side, while dark vowels and their low tongue positions were placed on the other side. All vowels were

scaled according to their tongue positions relative to the [a], which he called "the final aim of Vocalisation." (A Method, 6.)⁶³ While Stockhausen's triangle was unique as a means of vowel study used by voice teachers, current speech research has proven the value of such diagrams. Recent investigations by Gunnar Fant, among others, have resulted in x-ray tracings which provide a basis for a more defined vowel diagram. Fant measured tongue positions for each vowel according to the highest points on the upper tongue surface and charted these according to the vowel formants which resulted.⁶⁴ Fant's diagram appears in Figure 28, with a corresponding physiological tracing.

Stockhausen recommended the practice of singing various vowel sounds on sustained pitches in order to learn to distinguish their characteristics "according to the space in the cavity of the mouth, and not according to the contractions in the larynx." (A Method, 8.) While he urged against constant practice on [a], (see p. 170), and urged balanced practice of all vowels while singing, he did note the capacity of some vowels to correct

⁶³Stockhausen's vowel classification is inaccurate. The vowels along the right side of his triangle actually correspond in tongue position to those on the left side. Therefore, the [u] and [ʊ] use a high tongue position, the [o] and [ʌ] a middle tongue position, and the [a] a low tongue position. See Denes and Pinson, The Speech Chain, 54-75.

⁶⁴Gunnar Fant, Acoustic Theory of Speech Production (The Hague: Mouton and Co., 1907), 110-113.

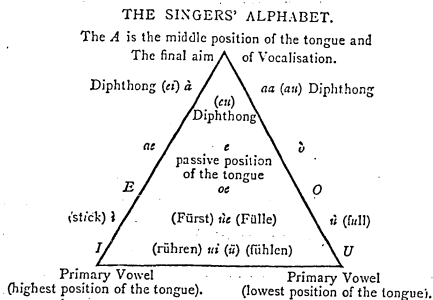


FIGURE 27: STOCKHAUSEN'S "SINGER'S ALPHABET." From A Method, 6.

Deficiencies in vocal quality:

The primary vowel [u] necessitates a lower position of the larynx which is favourable to voice production; and again by the high position which the tongue takes in the formation of [i], the epiglottis is protected from the pressure of the root of the tongue. Experience also teaches that with the help of the open vowels . . . a weak voice can be strengthened; and by the closed ones . . . a hard voice can acquire mellowness and roundness. (A Method, 8-9.)

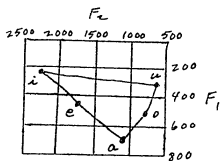


FIGURE 28: FANT'S VOWEL DIAGRAM WITH X-RAY TRACING. From Fant, Acoustic Theory of Speech Production, 112.

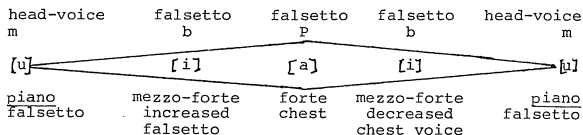
Not only does diction occupy a uniquely strong position in Stockhausen's method. His concept of the influence of vowels on various registers is unprecedented. No other Garcia teacher found this relationship important enough to be used as a teaching approach, nor attempted to classify it, as did Stockhausen:

Experience teaches us that closed vowels . . . suit the weaker register; open ones . . . the stronger. When a note in the middle register of the voice . . . is forcibly produced first on the closed

vowel [u], then on the high-closed vowel [i], and then on the medium [a], it will be found that [u] will produce the least sound, [i] a little more, and [a] the most; [u], by causing a membranoid tension of the vocal chords, suits the softer falsetto register; [i] strengthens it; and [a], by increasing the bulk of the vibrating part, produces the desired chest voice. (A Method, 13.)

By sustaining these three vowels on one breath in calculated order, [u], [i], [a], [a], [i], [u], Stockhausen noted that a messa di voce automatically resulted. He represented such a messa di voce, using vowels and consonants as follows:

Female Voices:



Male Voices:

When the beginner is capable of the above, Stockhausen recommended that he begin practice of the messa di voce on one vowel. (A Method, 13-14.)

Consistent with his attitudes, Stockhausen provided for most of the various vowel sounds in the exercises in his method. He included practice of vowels with diphthongs and vowels which are troublesome in various areas of the voice, while always insisting on the loose jaw and stabilized larynx. Some of these exercises are provided in Figure 29.



FIGURE 29: EXAMPLES OF STOCKHAUSEN'S USE OF VOWELS WITH VOCAL EXERCISES. From *A Method*, 49, 59, and 60.

While Stockhausen did not set down a theory or system of vowel modification, as did Garcia, he noted its necessity in the higher areas of the vocal range. He was unequivocally opposed to the use of open vowels in upper notes by Italian singers of his time. In this case, he urged "covering or modification of the vowel toward [e] , as did Garcia:

Such errors are currently allowed by today's Italian singers. Since they think, for example, that in the upper register [E] must not be covered, their quality is unable to attain homogeneity, and they sing stridently. (Chrysander, "Cherubini's Canons," 370. Translated by the writer.)

VI: CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER STUDY

Attitudes and Approaches in General

The factor which appears to be responsible for the success of all of the teachers under consideration was apparently their devotion to careful, thorough preparation of voice students. The singular tenet stressed above all others in their writings and teaching accounts was their consuming interest in sound vocal development. All of the teachers emphasized the necessity of years of methodical vocal preparation. An important part of this training was in the area of musicianship. Correct rhythm and intonation were important to all of the teachers. Garcia, Marchesi, and Stockhausen also affirmed the importance of solfeggio. Battaille was totally opposed to its use.

The teachers gave varied emphasis to the importance of physiological understanding in vocal teaching. Garcia and Battaille deliberately set about to stress those teaching factors grounded in scientific fact. Traditional emphases on registration and vowels were strengthened by the physiological knowledge and research of Garcia and Battaille. In addition, Garcia's interest in attack and voice qualities led to a similar stress in these areas. Battaille derived his own unprecedented emphasis on coordination

from his research, resulting in his "method of compensation." While some of the research of Garcia and Battaille was somewhat in error and incomplete, their significance in the area of voice science and its relationship to vocal pedagogy was considerable. Marchesi and Stockhausen acknowledged the importance of physiological study, but neither apparently felt qualified to attempt to break new ground in this area. Marchesi's few attempts at physiological justification were often misguided. Stockhausen's were less so.

Their general approaches to vocal teaching were also varied. Garcia taught students only on a private basis and adhered to a relentless lesson schedule. Stockhausen taught basic vocal technique privately, but utilized group instruction for studies in style and musicianship. Marchesi's approach to instruction was unique in its total adherence to group teaching. Her groups consisted of a class for beginners in vocal technique and musicianship, an intermediate class for introductory studies in style and repertoire, and two advanced classes which allowed students to specialize in either opera or concert areas. No record was found of Battaille's preference in this area.

It is probable that all of the teachers chose their students by careful audition. Garcia and Battaille gave particular emphasis to correcting vocal faults. They were confident that a thorough understanding of vocal physiology is an important aid in bringing about change in

vocal production. Marchesi, on the other hand, gave a great deal of emphasis to the selection of "good" voices for training. The inference can be made that she was hesitant to train voices with problems. Stockhausen did not address himself to this issue.

Attack

Garcia's interest in the act of phonation, resulting in his teaching of the coup de glotte, had significant influence on the development of a concept for describing vocal attacks. It was the subject of intense controversy for many years following its inception. While Garcia's students emphasized the importance of an attack well-coordinated with breath, their terminology and descriptions varied. Battaille opposed the coup de glotte as being too extreme and sought to replace it with an emphasis on the "method of compensation" and his open glottis concept. Marchesi modified the coup de glotte, at least in name, calling it serrer la glotte, but retained its essential meaning. She vigorously denounced Battaille's idea of the open glottis attack. Stockhausen accepted the coup de glotte as valid, but erroneously believed attack and vowel formation to occur in one coordinated action and, to some extent, in one physiological location. Battaille, Marchesi, and Stockhausen agreed with Garcia that a free lower jaw should accompany phonation. Battaille and Stockhausen also stressed Garcia's concept of the moderately-lowered larynx during attack. Marchesi did not

speak to the issue of larynx position.

Registration

While not unprecedented, the emphasis given registration by the Garcia teachers was nevertheless significant. In addition to the blending of passaggio areas and the unification of the total vocal scale, for these teachers the perfection of registration also bore implications for freedom, range, and flexibility needed for bel canto vocal music.

Some interesting variance appears in the terminology and pitch ranges of specific registers as set by each teacher. Garcia believed three registers to exist in women's voices: chest, falsetto or medium, and head. Marchesi and Stockhausen agreed. Battaille found evidence of only two, chest and falsetto. For men's voices, Garcia believed only the tenor to possess a head register, found in the very highest notes of the range. Battaille and Stockhausen noted only chest and falsetto for all male voices. Marchesi, of course, did not refer to the area of registration in male voices.

In regard to passaggio areas in female voices, the teachers were generally in agreement as to the definition of the area between the chest and falsetto or medium (see Figure 30). There was wide divergence concerning the passaggio between falsetto and head. Marchesi noted a definite transition area into the head register. Garcia and Stockhausen saw evidence of a large overlapping area

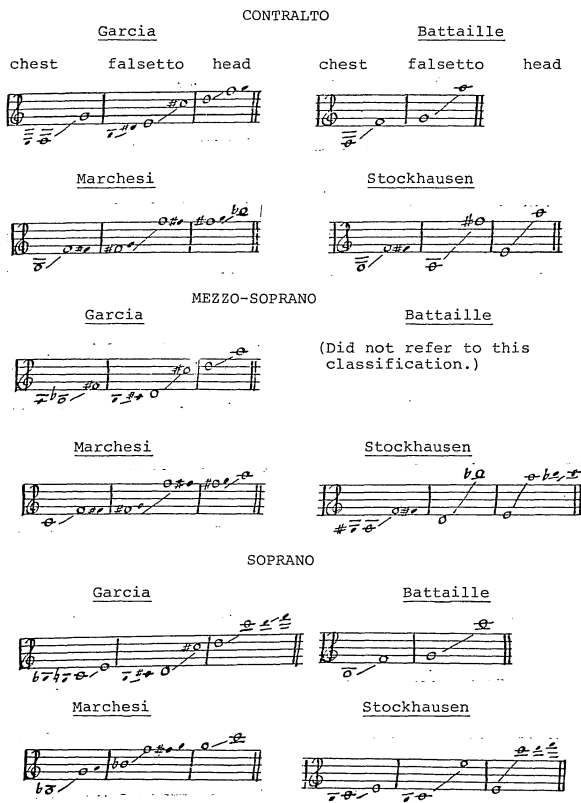
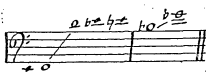


FIGURE 30: COMPARATIVE REGISTER RANGES.

BASS

Garcia

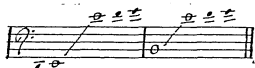
chest falsetto

Marchesi

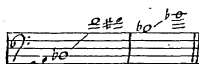
No ranges provided for male voices.

Battaille

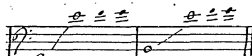
No ranges specified.

Stockhausen

BARITONE

GarciaBattaille

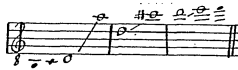
No ranges specified.

Stockhausen

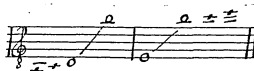
TENOR

Garcia

chest falsetto head

Battaille

No ranges specified.

StockhausenFIGURE 27--Continued.

in which notes could be sung in either register. Battaille, because of his two-register theory, found the falsetto register to have a rather extensive range with, of course, no transition area into head. An examination of the comparative register ranges in Figure 27 indicates that Battaille's two-register concept and the wide area of overlapping ranges distinguished by Garcia and Stockhausen may actually be similar concepts. Marchesi's register ranges for falsetto and head were decidedly different, with little or no overlapping.

For male voices, Garcia, Battaille, and Stockhausen were in general agreement as to the pitch limits of the chest register. For the falsetto register less agreement is apparent, to some extent due to the incomplete range limits provided by Battaille, and the wide area of overlapping noted by Stockhausen.

While the teachers differed in terminology and designations of register limits, their methods of achieving a unified vocal scale were virtually the same. Garcia first established the chest voice, then added notes of the falsetto using sustained note-by-note vocalization until the two registers were equal in strength and quality. Lower notes of the head register were added in the same way, while higher notes were approached by rapid vocalizing patterns. For flexibility and ease of production throughout the scale, Garcia devised an elaborate set of exercises which comprised all combinations of scales, intervallic

passages, and portamentos. Finished singers were expected to negotiate these exercises on any Italian vowel at rapid tempos. References to these exercises from other sources indicate that they may not have been original with Garcia himself, but rather a part of the Italian teaching tradition he inherited from his father.

Battaille's procedures for register equalization were evidently as thorough and painstaking as were Garcia's. Battaille left few specific exercises as evidence, but spoke of the progressive, thorough work needed to blend the registers and bring flexibility to the vocal compass. He placed great confidence in the portamento as a device for achieving equality, in addition to scales and exercises which involved alternately singing with chest and falsetto in the same pitch region. Garcia also valued these procedures. Both teachers stressed that a loose jaw must always be maintained for the achievement of an even scale.

A dominating emphasis for Marchesi was the achievement of a unified scale. She was the only teacher who apparently classified her singers very soon after their training had begun, after which registers were established within the pitch ranges which she felt to be proper. Like Garcia, she advocated use of "close timbre" for the highest notes of the chest and medium registers, in order that these notes may blend with the lowest notes of the next register. Her basic exercises are very similar to those of Garcia. Like her teacher, she advocated the use

of exercises employing progressively wider intervals in all sorts of combinations as fluency improved. She also recommended the portamento as an aid to register equalization.

Stockhausen concurred with most of Battaille's research on registration, but supported Garcia's three-register theory. Like Garcia, he found that, since the male head voice is effeminate in quality, male singers should use only chest and falsetto. Like both Garcia and Marchesi, he taught a manipulation of quality to blend the registers. For ascending the scale, he urged that the larynx be fixed moderately low, resulting in the somber quality. For descending the scale, he believed in the use of a brighter quality for the blending of registers.

Stockhausen joined Marchesi and Garcia in stressing the messa di voce as a demonstration of register evenness and supported Garcia's description of the physiological events which occur in execution of the messa di voce. However, while Garcia and Marchesi felt that this exercise indicates the accomplishment of control and should be used late in a singer's training, Stockhausen used it very early as a means to that end. An important component of Stockhausen's messa di voce was the influence which various vowels exert on the registers.

Like all of the other teachers, Stockhausen utilized the portamento for the attainment of an even vowel line. He urged its establishment first in the middle register,

then encouraged its use between registers. As a foundation for achieving a sound portamento, Stockhausen used exercises which combined short slides in the middle voice with the alteration of registers, the latter being the same device advocated by Garcia and Battaille. Stockhausen's scale exercises for evenness and flexibility are comparable to those of the other teachers. Unlike the other teachers, however, Stockhausen also utilized portions of important arias for exercises.

Voice Qualities, Vowels, and Diction

Garcia gave unprecedented emphasis to voice qualities and their physiological causes. From teaching and performance viewpoints, the result of this emphasis was his deliberate use of the timbre clair and timbre sombre as interpretive colors in the voice. Battaille noted the existence of both qualities, but gave no suggestions for their stylistic use. Garcia, Battaille, and Stockhausen endorsed a moderately low larynx position as the best for singers and identified the result as the voix sombre or timbre sombre. Marchesi did not mention the timbre clair and timbre sombre. She instead urged that a student's best tone quality be developed through freedom of the organs of phonation. She objected to nasal quality and the voix blanche, which results from singing with a persistent smile. Stockhausen likewise did not mention the two voice qualities as being distinctive, but gave a unique emphasis to the interpretive colors that clear diction exerts upon a voice. .

Garcia experimented with the relationship between vowel quality and voice quality, and urged that singers practice the use of various voice qualities with all vowels. As previously mentioned, Garcia, Marchesi, and Stockhausen emphasized darker qualities for ascending the scale and brighter qualities for descending. This concept eventually resulted in Garcia's theory of vowel modification, which generally called for slightly darkening the color of the vowels while ascending and reversing the process while descending. Marchesi and Stockhausen noted the necessity for vowel modification and gave rules similar to Garcia's, but did not treat the subject in detail. Battaille may have planned to discuss vowels and diction in one of his later works, for he never mentioned either of these areas. All of the teachers gave great emphasis to clear diction facilitated by the loose jaw and tongue freedom. They taught that consonants should be clearly articulated by free action of the tongue with other areas of the mouth, and that vowels should be formed deliberately while freedom of tongue and lower jaw is maintained.

Marchesi used only the [a] for all vocalises until vocal technique was secure. Because of its open vowels and forward consonants, Italian was the first language in which her students sang. After careful, extended work with Italian vowels, songs in other languages were studied. Stockhausen gave a much greater emphasis in this area than the other teachers. He was concerned with the poor

diction being used by contemporary singers, particularly in the German language. He urged concentrated study of speech and diction in college and secondary schools as a foundation for singers. He was the only Garcia teacher to treat diction as a study element apart from singing, an emphasis which led to his vowel triangle. While it was based on some mistaken conclusions, Stockhausen's triangle was a significant forerunner of the vowel diagrams used in current speech study. In contrast to Marchesi, he urged that all vowels be systematically practised from the beginning of a singer's study. He noted that some vowels have the capacity to correct vocal deficiencies and therefore was the only Garcia teacher to emphasize the pedagogical values of certain vowels. Likewise, Stockhausen's concept of the influence of vowels on various registers was unprecedented. None of the other teachers found this relationship important enough to be used as a teaching approach, nor attempted to classify it.

Breathing and Coordination

All of the Garcia teachers agreed that proper breathing should be established from the outset of a singer's training. They insisted upon diaphragmatic (abdominal) breathing, costal (rib) breathing, or a combination of the two as the proper type of singers. Battaille did some of his most original research in this area and noted that diaphragmatic-costal breathing results in the highest glottal efficiency. The exercises they recommended for the

achievement of proper breathing were quite simple and were practiced apart from the singing act at first. However, it is apparent that the Garcia teachers desired that correct breathing be combined with efficient phonation as soon as possible. This coordination of breath with glottal attack was of key importance, much more so than the ability to sustain long phrases. Garcia, Marchesi, and Stockhausen gave frequent reminders of this fact, and often provided suggestions for stylistic breathing places within long phrases and coloratura vocal lines.

Battaille apparently believed his most singular contribution to the field of vocal pedagogy to be his approach to coordination, the "method of compensation." He believed this method to have important and positive effects on phonation, intensity, and registration. No other Garcia teacher expressed an awareness of Battaille's method toward coordination. Marchesi insisted, however, that attack, register placement, and breath control be well-coordinated before basic repertoire could be attempted. Stockhausen emphasized coordination of breath with larynx and the "cavity of articulation." Garcia and Stockhausen gave a great deal of emphasis to a final area of coordination, that of uniting inward emotion with other factors of technique, resulting in beauty of expression.

Summation

The factors which were an important part of the pedagogy of all the teachers under consideration were as follows:

1. A concern with phonation, well-coordinated with proper breathing and breath control
2. A concern with thorough development of the vocal scale and the blending of registers, sufficient for the study of bel canto literature
3. A constant emphasis upon freedom, the loose jaw, tongue placement, and vocal flexibility and control, as opposed to volume of sound
4. An unusual emphasis on voice qualities as affected by laryngeal position and mouth position, and upon vowel colors and their influence upon the vocal scale as well as upon vocal interpretation

While there were important similarities in their approaches to all of the above areas, little evidence was found that the Garcia teachers regarded themselves as a "school" of vocal training. Although Battaille, Marchesi, and Stockhausen were openly devoted to their teacher, they absorbed important influences from other sources as well. In addition, they all made their own innovations in some areas of vocal pedagogy:

1. Battaille did original research in breathing and coordination of breath with attack, and applied his findings to the singing voice

2. Marchesi gave unprecedented emphasis to the group concept of vocal training and provided volumes of exercises, vocalises, and études for her pupils
3. Stockhausen found diction to be an important priority for study, devised unique approaches to its study with his vowel triangle, and gave unusual emphasis to vocal literature by excerpting phrases from standard works for the study of technique by his singers

Furthermore, there were obvious pedagogical disagreements among Marchesi and Battaille and Stockhausen, if not open rivalry. Marchesi denounced the open glottis attack and the two-register theory of Battaille. Battaille was critical of the solfeggio, which Marchesi and Stockhausen both advocated. Stockhausen pointedly disagreed with Marchesi's use of the [a] as a foundational vowel to be studied before all others, and of her attempts to divide students by qualifications into concert and opera classes. It may be significant that all of these areas of disagreement were not creditable to a particular principle of Garcia himself, but were innovations instituted by each teacher.

Recommendations for Further Study

While this study has provided some conclusions concerning the traditional approaches to vocal teaching which may have influenced Garcia and his students, a more thorough study of this traditional heritage may be

rewarding. As sources become available, such a study might possibly include the teaching methods of Tosi, Porpora, Garcia's father, Manuel del Popolo Vicente Garcia, and Pauline Viardot-Garcia, as well as the younger Garcia. A related study might include an intensive comparative study of the exercises and vocalises used by teachers of the period to determine the specific exercises and types of exercises which were passed down the generation line. Such a study could also be made of the exercises and vocalises of the Garcia teachers, Battaille, Stockhausen, and Marchesi. A third area for future study concerns performance practice. Garcia, Marchesi, and Stockhausen devoted much of their written material to detailed suggestions for style and vocal performance practice in the bel canto period. A detailed study of this factor would surely reap important rewards, particularly for the performance of the vocal music of Rossini, Bellini, and Donizetti. A final area may be of some interest. There may be more substance to the disagreements about vocal training and hints of rivalry between the Garcia teachers as discovered in this project. A study of the writings and, if available, of the correspondence of these teachers, may yield some interesting conclusions concerning the intra-professional relationships which may have been theirs. In addition to disagreements, such a study might uncover teaching approaches which may have been shared ... between these teachers.

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by Julian Marshall, "Bataille, Charles Amable," by
Gustave Ferrari, "Duprez, Gilbert," by Gustave
Chouquet; "Marchesi, Mathilde Graumann," by
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APPENDIX I

TRANSLATION OF THE REPORT ON GARCIA'S MÉMOIRE SUR LE VOIX HUMAINE¹

PHYSIOLOGIE--Report on the Thesis on the Human Voice,
presented to the Academy of Sciences by Manuel Garcia.
(Commissioners: Magendie, Savary, Dutrochet; reported
by [Henri] Dutrochet.)

The Academy has charged Messrs. Magendie, Savary,
and myself with reporting on a treatise which has been pre-
sented by Manuel Garcia, entitled Thesis on the Human
Voice. The state of health of Mr. Savary has not permit-
ted him to be a part of the commission. We also regret
the death of Mr. Savart, who had also joined us, and to
whom we have been indebted for his original research in
acoustics. He was with us when we witnessed the events
which we have the honor of reporting to the Academy.

The theory of the formation of various sounds by
the human vocal organ is incomplete. This theory has yet
to be reconciled with the type of instrument to which the

¹Translated by the writer from the report which
appeared in Comptes rendus hebdomadaires des séances de
l'Académie des sciences 12 (1841): 638-644.

human vocal organ ought to be compared. Nearly all physicists regard it as belonging to the type of wind instrument in which the sound is generated by the vibrations of certain solid and elastic bodies. On the other hand, Savart had compared the vocal organ to the flute-type instrument used by hunters to imitate the song of certain birds, in which the sound is solely generated by vibrations of the air which bounce off the walls of a cavity, or which are broken on the edge of a board.²

In spite of the authority which deservedly belongs to our colleague in acoustical matters, it must be noted that his theory of voice has gathered few followers. Furthermore, we advised him to revise and complete his theory a few days before his death. It is hoped that some traces of this revision will be found in his papers, which will not fail to be of great interest.

However that may be, the vocal organ is so perfect and has such marvelous and diverse abilities, that one is tempted to believe that it is not a single instrument, but rather that we enjoy the admirable privilege of continually transforming it into a multitude of different instruments. Let us observe it, for example, in the chest register, or let us see it exercised in the falsetto. Could it not be said that two types of registers are produced by two

²The latter reference is apparently to the type of edge tones produced by flue organ pipes, as described in Helmholtz, 88-92; and Charles A. Culver, Musical Acoustics (New York: McGraw-Hill, 1956), 184-186.

instruments which are substituted one for the other? In the meantime, we remain unsuccessful in determining the differences which undoubtedly exist in the mechanism of production of these two sorts of voice, which possess such contrasting qualities. Yet it is certain that they are completely distinct parts of the voice. In fact, in the area of the junction of these two voices, or registers, that location where the lowest pitches of the falsetto give way to the highest pitches of the full voice, there are several pitches which may be produced by employing either of these two voices. This fact, well known to singers, has been acknowledged in physiological science only in the last few years. It is set forth for the first time in the work of Dr. Rusch entitled Philosophie de la voix humaine, a portion of which has been translated into English by Dr. Bennati. "It is not difficult to imagine," writes Rusch, "that a part of the scale of this type of voice (the falsetto) lies between the last pitches of the natural voice (the chest voice) and the highest pitch which one is capable of producing. In this sort of production, a type of falsetto may be formed a little below the point where lies the natural voice."

The facts which have been submitted to us by Manuel Garcia have clearly confirmed this assertion. This skillful teacher of singing has trained some students to maneuver their voices with sufficient facility, in order that the sounds which derive from the falsetto may be

separated willfully and distinctly from those which derive from the full voice. Therefore, after having been taken to their highest diatonic pitch in full voice, the voices of men and women can be extended by using the falsetto to raise them higher. They can then descend diatonically, always in falsetto, until a certain distance below the limit where the full voice ordinarily occurs. In this way, the same diatonic pitches which would have been produced in ascending by the full voice are produced by descending in falsetto. Furthermore, we have heard a single singer produce alternately and at will the same pitch with both full voice and falsetto, thus producing parallel pitches in two voices. The extent of the pitch area held in common by the two voices, or registers, of chest and falsetto, is variable according to individuals and according to their facility, which more or less easily gives them the optional use of one or the other register in the middle of the voice. While this area usually encompasses a sixth to an octave, it may sometimes extend to a tenth. According to Garcia, this area common to two registers is located on the same pitches for both men and women.

According to these facts, it cannot be doubted that the full or chest voice and the falsetto must each be the product of an important and unique modification of the mechanism of the vocal instrument. This conclusion is further confirmed by an observation of Garcia which

particularly impressed our colleague, Savart, who, like us, witnessed it. In order to produce the same pitch in the part of the diatonic scale which is common to both registers, the full voice and the falsetto must employ a quantity of air or breath which is nowhere near the same. Garcia demonstrated this fact to us with the following experiment. Having filled his lungs with as much air as possible, a singer produced in full voice a certain pitch chosen from the pitch area common to both registers, and he prolonged this vocal sound until the air in his lungs was exhausted. The pendulum of a metronome served, by its oscillations, to indicate the duration of the sound. Having refilled his lungs, the singer next produced the same pitch in falsetto and sustained it for as long as possible. From these comparative experiments, repeated several times, we noted twenty-four to twenty-six oscillations of the pendulum during the duration of the pitch in full voice, whereas there were only sixteen to eighteen oscillations while the falsetto was produced.³

This experiment proves that, in production of the same pitch and in a given time, the vocal instrument dispenses more air in producing the falsetto than in producing the full voice or chest voice.

³ Dutrochet's report contains no information concerning specific pitches, vowels, and metronomic settings which were used in this experiment.

According to the common opinion of artists, the falsetto voice forms a particular register which differs from the register belonging to the chest voice, which lies below it, and from the head voice, which lies above it. Garcia, however, does not admit to this opinion. He considers the falsetto voice and the head voice to belong to the same register, using the same mechanism for the production of sounds throughout its extent. In this regard, he draws his opinion from the fact that the falsetto and head voice present a perfect and unchanging continuity. There are no adjacent notes here which can be produced alternately by one or the other of these two voices, as there are in regard to the transition of the chest voice to the falsetto. Consequently, this latter voice and the head voice belong to the same register, which Garcia designates the falsetto-head register.

It is generally known that when the human voice ascends from low to high, as much in chest voice as in falsetto-head, the larynx gradually rises. This gradual ascension of the larynx has been regarded as being influential on the progressive strengthening of the higher pitches, since it results in the gradual shortening of the vocal tract. Several physiologists have doubted this shortening of the vocal tract actually has the influence attributed to it, particularly to the extent of high vocal pitches. We do not intend to be occupied here with theoretical questions. Our task is to establish

facts, and within the realm of facts the art of song has been presented to us anew. Here are those facts of which it consists:

The full voice and the falsetto, each seeming to retain their particular mode of production, can each produce two principle varieties of timbre which Garcia has designated as timbre clair and timbre sombre. These two vocal timbres have heretofore been designated by artists as voix blanche [white voice] and voix sombrée [sombre voice]. In the production of timbre clair or timbre sombre, either in chest voice or falsetto-head, some very remarkable alterations of the larynx and soft palate are manifested. Here are the facts which Garcia has allowed us to witness:

In the diatonic production of pitches from low to high with the timbre clair, in full or chest voice as well as in falsetto-head, a continual and gradual ascension of the larynx is observed. The soft palate is therefore constantly lowered. This is not the case, however, when the voice passes to timbre sombre.

In the full or chest voice produced with this timbre sombre, while ascending from the lowest notes of this register to the highest notes proper to it, the larynx remains constantly fixed in its lowest position and the soft palate is raised. It is the same in the production of the lowest part of the falsetto in timbre sombre, or of those pitches which can be equally produced in the full voice.

However, when the singer, still using timbre sombre, passes from the highest part of the falsetto to that area especially designated by artists as the voix de tête [head voice], the larynx rises slightly, but not as much as when the voix de tête is produced with timbre clair. In order to make the commissioners aware of this distinction, some of Garcia's students, who were trained to produce the timbre clair and the timbre sombre at will, demonstrated some scales in falsetto in which each pitch was alternately produced in timbre clair and timbre sombre. The difference between these two qualities was then perfectly distinguishable, the one being ringing and the other dull. In addition, we could see the larynx fixed in a raised position for the production of a certain pitch in timbre clair and descend considerably for the production of this same pitch in timbre sombre. We were allowed to follow this alternate ascension and descension of the larynx with both the eye and the fingers.

These observations are not completely new to the physiology of voice.

In fact, on 1 June 1840,⁴ Diday and Pétrequin presented a thesis to the Academy of Sciences concerned with the physiological study of the voix sombrée, a particular

⁴Dutrochet notes here that Garcia's thesis was not presented to the Academy of Sciences until 16 November 1840.

voice which has been known for only three years in France, where it was imported from Italy by a celebrated artist associated with our first lyric production.⁵ In their thesis is recorded the physiological fact of the low fixed larynx position for the diatonic production of all pitches in chest voice, voix sombreée. However, these writers have not followed the phenomena which this same timbre sombre presents in the falsetto. They have even apparently considered the timbre sombre to affect only the chest voice. Garcia may therefore claim a part in the observation of the mechanism which controls the voix sombreée. This mechanism has demonstrated that, in the full or chest voice, as well as in the falsetto or head voice, the human vocal organ may produce the same scales using different lengths of the vocal tract, resulting in a change of timbre. Consequently, the different lengths of this tract do not necessarily determine all the pitches formerly attributed to them, and these same differences in vocal tract length always coincide with the existence of either timbre clair or timbre sombre in the

⁵ This reference is apparently to Gilbert Duprez (1806-1896), who adopted the voix sombreée and used it in Naples in 1835, and then in Paris in Rossini's Guillaume Tell, 17 April 1837. See p. 50; Grove's, 5th ed., s.v. "Duprez, Gilbert," by Gustave Chouquet; and Henry Pleasants, The Great Singers: From the Dawn of Opera to Our Own Time (New York: Simon and Schuster, 1966), 165-170.

voice.⁶

In addition to the two principle timbres designated as timbre clair and timbre sombre, there are several other timbres, such as, for example, guttural timbre, nasal timbre, and so forth. Garcia has endeavored to determine the mechanical conditions of these timbres. We will say nothing in regard to these, since we have not verified Garcia's assertions.

In the human voice, there sometimes exists a lower register, comprising the lowest notes which can be produced in chest voice by the basso profundo. This register, called the contrabass register by Garcia, has still not been observed in its fullest extent, as found with some singers of religious chant in Russia. Doctor Bennati was the first to make note of this to physiologists. The pitches of this register undoubtedly belong to a vocal instrument sui generis, very different from the one to which belong the pitches of the chest voice. In the lowest notes of this latter voice or register, the larynx is lowered below its position of rest. On the contrary, for the pitches of the contrabass register which lie even lower, the larynx is carried to its greatest elevation possible. Garcia has

⁶This material apparently refers to a mid-nineteenth theory that the voice changes pitch by fluctuation of larynx position, thereby lengthening and shortening the vocal tract. Battaille referred to this theory as well: "Mais, l'habile physiologiste prétend que la longueur de la trachée--artère ou porte--vent influe sur l'elevation ou l'abaissement du son, ce qui est une erreur." See Battaille, Nouvelles recherches, 55.

demonstrated for us a very low and raucous sound in this register which is more like the growl of an animal than the sound of the human voice. However, one of us has been able to study the contrabass voice of the Russian singer Yvanoff, who can descend as far as g of the octave below the ordinary basso.⁷ Although this note was infinitely superior in quality of sound to the noise produced by Garcia, it would be difficult to introduce it into chant.

According to this account it is easily seen that one mechanism cannot explain the formation of all the musical sounds that can be produced by the human vocal organ. This organ can truly be regarded as being alone capable of representing an assembly of instruments, different one from the other, and capable of mysterious modifications which occur and are established with an admirable speed according to the will of the experienced singer. Furthermore, if we cease to consider the vocal organ as a musical instrument and consider all of the non-musical sounds which it can produce through varieties of articulation, through the imitation of certain noises, or the cries of certain animals, etc., one can only be profoundly astonished at the multiplicity of mechanical alterations of which this organ, so simple in its structure, is capable.

⁷The reference here is probably to G₂.

In summary, we believe that Garcia, with his wisdom and with the accuracy of his observations as professor of singing, has seen and described several interesting facts in his thesis. It will be necessary for us to keep an account of these facts as a part of the physiological theory of the human voice. We have the honor of presenting this thesis to the Academy with our satisfaction.

The conclusions of this report were adopted.

APPENDIX II

TRANSLATION OF AN EXTRACT FROM BATAILLE'S

NOUVELLES RECHERCHES¹

PAPER PRESENTED

PHYSIOLOGIE-New Research in Phonation; by Charles Battaille

(Extract by the author.)

(Commissioners: Flourens, Milne Edwards, Bernard, Longet.)

If the phenomena of all sorts, revealed in the thesis which I have the honor of submitting to the Academy's judgement, are examined at a glance and in their entirety, they will be seen to be grouped into three areas which are fundamentals, correlatives, and direct essentials for the production of the human voice. These three phenomena, which can be called the vocal tripod, are: the tension of the vocal folds, the posterior occlusion of the glottis, and the current of phonatory air. These phenomena are essentials and correlatives to such an extent that, if one is absent, phonation is impossible.

¹Translated by the writer from the extract which appeared in Comptes rendus hebdomadaires des séances de L'Académie des sciences 52 (1861), 716-722. Comments and comparisons of this material with current research are included in the discussion of Battaille's work in Chapter III, pp. 79-114.

I realize, and have so stated, that some pitches can be produced using tension and air current alone, with the glottis slightly open in its length. But, according to my recollection, the result thus obtained is almost aphonia and is restricted to a very limited series of pitches which are so labored that they may be considered to be outside of the act of phonation. Henceforth, I will divide my general conclusions into three sections, successively set apart according to the tension of the vocal folds, the posterior occlusion of the glottis, and the current of phonatory air, and I will summarize each of these three phenomena from two perspectives: the mechanism which produces them and the results issuing from this mechanism.

I. Tension of the Vocal Folds

A. Generating mechanism: The tension of the vocal folds simultaneously occurs in anterior-posterior and lateral directions.

The causes of anterior-posterior tension lie in the cricoid, thyroid, and arytenoid cartilages, in the articulations between these cartilages, and in the cricothyroid and posterior arytenoid muscles. In fact, the vocal folds are stretched between the thyroid and the arytenoids; but, since the arytenoids are fixed to the cricoid, which carries them in its movements, it is actually with the aid of the thyroid and the cricoid that the arytenoids receive

nine-tenths of their longitudinal tension. The cricothyroid articulation allows a rocking motion by which the thyroid, carrying with it, on its posterior part, the arytenoids and the vocal folds which are attached to them. For its part, the cricoarytenoid articulation permits some oblique movements of the arytenoids, from front to back and from inside to outside, which uniformly cause an anterior-posterior tension. The cricothyroid muscles, running from bottom to top and disposed in fasciculi of unequal length, bring about the rocking motion, either in one movement or gradually. For their part, the posterior arytenoid muscles slightly pull the arytenoids in back and fix the vocal folds posteriorly. Nevertheless, it must be said that, in this circumstance, the principle goal of these muscles is to stabilize the arytenoids.

The causes of the different lateral tensions in the sub-glottal and the ventricular regions of the vocal folds:

In regard to the sub-glottal region, if it is recalled that the vocal membrane is very solidly fixed to the superior edge of the cricoid, and that longitudinal tension gives a certain fixity to the free border of the vocal folds, it will be understood how the intermediate region between these two points, caused to become convex by the rigidity of the fascicular plane or the horizontal portion of the thyroarytenoid muscles, sustains a tension which is verified by laryngoscopic observation.

The ventricular region is tensed in the following manner: the internal oblique or arciform fibers of the thyroarytenoids become more rectilinear than curved, develop in the manner of a fan, and draw the fixed membrane inwardly from the superior border of the fascicular plane, which is tensed longitudinally, to the free border of the folds.

B. Results:

1. The vocal folds are stretched in length and in width.

2. The longitudinal tension and the external lateral tension or ventricular tension always take place. The internal lateral tension or sub-glottal tension may disappear and, as a matter of fact, does disappear in the falsetto register.

3. Total or partial tension places the ligaments in a state of vibration.

4. Since it may be increased or decreased by perceptible gradations, (this tension) permits the folds to engender all the pitches of the human voice, from low to high, and reciprocally.

5. While increasing and decreasing, (this tension) may, for its part, compensate the effects of intensity or weakness of the air current and permit the increase or decrease of the force of sound on each degree of the vocal scale.

II. Posterior Occlusion of the Glottis

A. Generating Mechanism:

The glottis is closed in the rear in its intercartilaginous portion and in a certain area of its interligamentous portion.

The occlusion of the intercartilaginous glottis simultaneously results from the articulation of the arytenoids with the cricoid, from the conformation of the internal surfaces of the arytenoids, and from the action of the thyroarytenoid, lateral cricoarytenoid, and posterior arytenoid muscles.

The cricoarytenoid articulation permits the arytenoids an oblique movement from outside to inside and from front to back, which brings their bases together, allowing them a rotational movement about themselves which gradually affronts their vocal processes. The internal surfaces of the arytenoids, slightly convex from top to bottom, permit these cartilages to be affronted very closely and gradually, either by the inferior third, or by the superior two-thirds, of these internal surfaces. The thyroarytenoid and lateral cricoarytenoid muscles cause progressive affrontement. The transverse and oblique arytenoid muscles determine the entirely posterior affrontement of the arytenoids. If this affrontement takes place by the inferior third of the internal surfaces of the arytenoids, it is due to the inferior horizontal fibers of

the thyroarytenoids, to the internal and middle fibers of the lateral cricoarytenoids, and to the inferior fibers of the transverse arytenoids. If it takes place by the superior two-thirds of the above-named surfaces, it is produced by the internal and external oblique fibers of the thyroarytenoids, by the middle and external fibers of the lateral cricoarytenoids, by the middle and superior fibers of the transverse arytenoids, by the oblique arytenoids, and by the small thyroarytenoids. The partial occlusion of the interligamentous glottis is due to the superior horizontal fibers of the thyroarytenoid muscles inserted on the free border of the vocal ligaments.

B. Results:

1. The glottis may be closed in the rear in all its intercartilaginous portion and in a certain area of its interligamentous portion.
2. This occlusion may gradually increase or decrease.
3. It expands or lessens the area of the vibrating surface and thereby coincides with the production of low or high pitches.
4. By increasing and decreasing, it may, for its part, compensate the effects of strength or weakness of air current and allow the increase or decrease of intensity of sound on each degree of the vocal scale.
5. The progressive affronting of the arytenoids may sometimes occur to the extent of the inferior third of the internal arytenoid surfaces, which happens in the chest

register, and sometimes to the extent of the superior two-thirds of these surfaces, as happens in falsetto register.

III. Current of Phonatory Air

Air, drawn by inhalation into the chest and brought with a certain force against the vocal ligaments, which are previously stretched, brings about vocal production. I will not describe here the respiratory mechanism used for phonation, seeing that it requires a study which is actually outside the purpose of this paper. I will content myself with setting forth the results:

1. The passage of an air current which possesses a desired intensity and which encounters the vocal folds, which are approximated and tensed, causes them to enter into vibration.
2. The increase in intensity of the air current may coincide with the elevation of pitch, which is due to the tension of the folds.
3. For the same pitch, the increase in intensity of the air current causes a weaker tension of the folds and a greater opening of the glottis in the rear.
4. Stretched in all directions, the folds vibrate in the manner of membranes stretched in all directions.
5. The intensity of the sound and the amplitude of the vibrations are in direct proportion to the intensity of the air current.

Diverse Considerations

Fasciculation of muscles: I cannot emphasize enough the disposition in fascicles common to all intrinsic muscles of the larynx. I believe that a complete enough knowledge (of this factor) cannot be had. (This fasciculation) is the certain cause of the marvelous faculty which the human voice possesses to rapidly sing through the smallest intervals of the vocal scale and to charm the ear by the rapid connection of the most separated pitches. Moreover, it plays an important role in the production of the chest and falsetto registers.

Double employment of muscles: The intrinsic muscles all have the common purpose of moving the cartilages of the larynx. Therefore, on the one hand, the posterior cricoarytenoids separate the arytenoids which are brought together by the posterior arytenoids, the lateral cricoarytenoids, and the thyroarytenoids; moreover, these three muscles cause the arytenoids to pivot on themselves. The cricothyroids cause the cricoid to rock. On the other hand, the thyroarytenoids are used to stretch the vocal folds in width, using their sub-glottal and ventricular fibers, and the cricothyroids unite with the posterior arytenoids to determine anterior-posterior tension of the folds.

Application of observed facts to the principle phenomena of singing: Let us first recall the distinctive characteristics of each of the registers:

In the chest register the glottis is linear; the gradual joining of the arytenoids takes place by the inferior third of their internal surfaces; the folds vibrate in their three regions, and the tension is stronger than in the falsetto register for the same pitch.

In the falsetto register the glottis is more or less of elliptical form, more loosely closed in the posterior portion than in the chest register for the same pitch; the sub-glottal tension is not present; the anterior-posterior and ventricular tensions are weaker for the same pitch than in the chest register; finally, the progressive joining of the arytenoids takes place by the superior two-thirds of their internal surfaces.

Now let us examine some of the principle phenomena of singing, the range of the chest voice, for example. This range varies to a great extent and I want to explain why:

The progressive occlusion of the glottis in the rear coincides with longitudinal tension for the elevation of pitch. Now, this occlusion is for the most part due to the affrontement of the arytenoids, but also to the superior horizontal fibers of the thyroarytenoids inserted in the vocal folds. It follows that, during all the progressive phases of arytenoid affrontement, the elevation of pitch will be easily accomplished. Beyond this point, however, especially if the fibers inserted in the ligaments are weak or absent, the elevation of pitch can no longer

take place except by longitudinal tension. As a matter of fact, all singers whose chest voices are extensive possess vocal processes (arytenoid apophyses) which are especially well-developed in length, as part of a very large larynx, indicative of great development of the vocal folds, and, therefore, need less longitudinal tension for the elevation of pitch. On the other hand, with women and children, whose vocal processes are shorter and whose larynxes are smaller, the chest voice is less extensive, necessitating greater longitudinal tension. This returns us to the principle that the extent of the chest voice must depend on the length of the vocal processes, on the presence or the absence of the horizontal fibers inserted in the vocal folds, on the number and strength of these fibers, on the extent of contraction permitted the cricothyroid muscles, and finally on the degree of resistance of the vocal folds. It is a known fact that voices of men and women fall into different types of qualities which have been designated under the voice classifications of bass, baritone, tenor, soprano, and contralto. For a skilled ear, there is no possible confusion between these different types. One might as well confuse the sound of a contrabass with that of a violoncello, and the sound of a clarinet with that of an oboe. These different sonorities result from differences in size, in density, and in the particular structure which occurs in the vocal folds of different subjects. It is for this reason that it is necessary to

classify voices, not according to their range, but according to the character of sound which belongs to them.

Without a doubt, one of the most curious phenomena of the human voice is the coexistence of two distinct registers, simultaneously superimposed and overlapping in such a way that one exceeds the other at the top of the range, and is, in turn, surpassed at the bottom. Now, the physiological laws which I have endeavored to establish are in complete harmony with the above phenomena. First, I have said that the posterior occlusion of the glottis raises the pitch of the chest voice concurrently with the ligamentous tension. Let us suppose that I emit the pitch f^1 in chest register. The intercartilaginous glottis is closed in all its length and the vocal folds are tensed in their three regions. I suddenly pass to f^1 in falsetto. The sub-glottal region becomes relaxed; that is, the area of the vibrating surface diminishes a good third in its thickest region. To produce the pitch f^1 , therefore, I will no longer need as great a tension, since, henceforth, I will possess the factor of a smaller and more narrow membrane. In addition, we have seen that, in this circumstance, the longitudinal tension diminishes. Simultaneously, the posterior opening of the glottis is increased. Now, if the field of longitudinal tension has increased, and if, on the other hand, due to the increase of the posterior glottal opening, I may once again affront the arytenoids, I will be permitted to pass into falsetto

voice on the pitch f^1 , using all the tension and occlusion remaining to me; and if f^1 is the limit of my chest voice, I will be able to surpass this limit with the falsetto register.

Now, why does the falsetto register disappear in the low range before the lower notes of the chest register? I will explain:

As the lowest pitches of the falsetto are reached, the ligamentous tension becomes weaker and the glottis is opened more and more in the rear. The sound ceases at the point where the separation of the folds is too great and the tension too weak for vibration to take place. Now, at this point the pitch in falsetto is the same as the very pitch where, in chest register, a sufficient tension and affrontement can be established to produce the vibrations anew.

Now, by explaining how the chest register is exceeded above by the falsetto register, and in turn exceeds the falsetto below, I have sufficiently clarified the phenomenon of the coexistence of two registers in the middle part of the vocal scale.

VITA

James Richard Joiner was born 15 December 1942 Brookhaven, Mississippi. He attended the public schools in Natchez, Mississippi, and was graduated from Natchez High School in 1960. In the same year he enrolled in Mississippi College and completed a Bachelor of Music Degree in Church Music in May 1964 with an applied area in Voice. From 1964-1966 he attended Southwestern Baptist Theological Seminary in Fort Worth, Texas. He received the Master of Church Music Degree from that institution in December 1968. The title of his Master's thesis was "A Study of the Relationships Between the Tunes of American Folk-Hymnody and the Tunes of the General British-American Repertory of Folk Song." After seven years of work in church music and private vocal teaching in Newport News, Virginia, and Silver Spring, Maryland, he entered the graduate program in voice at Louisiana State University. From this institution he received the Master of Music Degree in Vocal Performance in December 1974. He was enrolled in the Ph.D. program in College-Level Teaching (Vocal Pedagogy) from 1974-1979. In August, 1975, he assumed the position of Assistant Professor of Music at Campbellsville College, Campbellsville, Kentucky, a position still held in December 1979.

EXAMINATION AND THESIS REPORT

Candidate: James Richard Joiner

Major Field: Music

Title of Thesis: The Vocal Principles of Garcia As Represented by His Pupils:
Battaille, Marchesi, and Stockhausen

Approved:

Paul Knowles
Major Professor and Chairman

James E. Ingham
Dean of the Graduate School

EXAMINING COMMITTEE:

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Date of Examination:

October 24, 1979